SEPTEMBER, 1953

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CONTAINERS FOR GASES, LIQUIDS AND SOLIDS

SEPTEMBER 1953

BUTANE-PROPANE News

NBP

VOLUME 15 • NUMBER 9

Contents

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LETTERS

Montana

I wonder if you can give me information on how much the heat loss on a home will be increased when the temperature in the home is maintained at about 85° instead of a normal 72°? Also how much difference would there be in the cost of heating that home?

I have a customer whose heating plant was designed to maintain a normal temperature of around 72°, with a 90° differential, but who keeps the temperature in the home from 80° to 85°. He has been comparing his fuel costs with similar homes that keep the temperature at a normal 72°, and he can't understand why his fuel bill would be so much higher. Therefore, I want to know how much higher his bill should be with the higher temperature he maintains in his home. That information will give me a basis on which to determine whether or not there is something wrong with his heating installation, or if his higher fuel bill is entirely caused by the higher temperature he maintains.

E.J.S.

Since your client maintains a temperature between 80° and 85° F., it is about 10° above the design temperature of 72° F. The maximum differential becomes 100° F. instead of the 90° stated in your letter.

The heat loss varies directly as the temperature differential, other factors remaining equal, so the increased heat loss based on the maximum design conditions would be $\frac{10}{90} \times 100 = 11.1\%$. The average increase would be much greater because the average differential temperature for the season is much less. For instance, the average outisde temperature being 32° the increased loss would be $\frac{10}{40} \times 100$ or 25%.

Probably the best way to estimate the total increased fuel bill is on the basis of degree days. We have no information regarding degree days for your town, but will use the record of Missoula, which appears to be about 50 miles north and at approximately the same elevation. It should provide a satisfactory basis for comparison.

The degree days for the five winter months are listed below. They are an average based on 54 years of weather records.

November, 951; December, 1235; January, 1331; February, 1072; March, 903. Total for five winter months, 5492.

Your customer's practice of maintaining the higher room temperature would have the effect of increasing the degree days about 10 per day or 1500 for the five months period listed above. This would increase his fuel consumption at least

$\frac{1500}{5492} \times 100 = 27.4\%$.

It is possible that your customer's fuel bill is more than 27.4% greater than his neighbor's for an entire year because there are several other months during which heating will take place, and also he will be using fuel when his neighbors do not have their heating equipment in use. It is quit feasible that his fuel bill could be 35 to 40% more than other comparable homes.—Ed.

Italy

I would like to know if in the U. S. there is any device which tells the customer the quantity of L. P. gas left in a cylinder being used.

L.G.

There is no specific device for accomplishing what you have in mind. Some cylinders can be fitted with a magnetic type gauge or "slip-tube" gauge if they are properly designed and constructed for such equipment. This would require special fabrication and would represent considerable expense in relation to the cost or value of the cylinder.

The only other means of determining the L. P. gas would be to weigh the cylinder when it is filled and re-weigh it as the gas is removed.

The common practice is to use a dual cylinder set-up with a "change-over valve" which cuts off the empty cylinder and cuts in the full cylinder, thus assuring a continuation of service until such time as the empty cylinder can be replaced.—Ed.

Texas

A laundry and dry cleaning plant here has a Leffel Scotch-Marine, 60 hp, 125 w.p. boiler, oil fired. We would like to have a gas fired burner recommended for it, using butane gas, 3300 Btu, which would be supplied from two 1000-gal. aboveground tanks with vaporizer, low or high pressure.

It is costing about $400 a month to operate their boiler on No. 5 fuel oil. We would like a comparison of operating cost with butane gas at 8 or 9 cents and fuel oil at 10 cents.

D.D.T.

We suggest that you contact the manufacturer of the boiler for the gas burner and its controls to operate the boiler you mention. They should also be able to advise you of recommended changes in baffling and the fire box brick work, if required when changing to gas firing.

The cost of No. 5 fuel oil does not stop with the purchase price at the siding. It also should include the cost of getting it to the burner. This extra cost includes handling, pumping, heating, burner maintenance, atomization, etc., and is estimated by most combustion men to be from 1 cent to 2 cents per gal., depending on climate, type oil, burners, etc.

Very little cost is involved in converting the L. P. gas and burning it in an installation like you contemplate. The only item is the heat used to vaporize the L. P. gas. Therefore, being conservative, 1 cent can be added to the delivered price of the oil for handling, pumping, atomization, maintenance, etc., making its cost at the burner 11 cents per gal.

On a boiler of the size you are considering, combustion efficiency will be about the same with gas or oil. If the boiler is maintained and operated in first class condition oil would have a little advantage. Usually this is not the case and the easier control of gas and combustion air gives better operation.

No. 5 oil runs about 147,000 Btu per gal. while butane is around 103,000 Btu per gal. In order to compare costs on a common basis the cost of fuel at the burner tip will be determined on the basis of

W. R. SIDENFADEN
President

R. C. HARRIS
Vice-President

Five years ago Mr. W. R. Sidenfaden and Mr. R. C. Harris put together their respective propane distributorships and formed Suburban Gas Service. Through vision, courage and hard work their operation grew to become one of the largest in the West with twenty bulk plants extending from San Francisco to Yuma.

We heartily congratulate "Sid" and "Dick" on their outstanding achievement. It has been a pleasure indeed for us to serve Suburban Gas Service these five years and to have played some small part in the dynamic story of progress behind this fine company.

Exact reproduction of Suburban reflectorized billboards appearing on main highways throughout California.

BUEHLER

QUALITY YOU CAN SEE

TANK & WELDING WORKS

5000 PACIFIC BLVD., LOS ANGELES 58, CALIF.

This advertisement is one of a series.

1,000,000 Btu. Remember, oil costs 10 cents plus 1% handling, etc., or 11 cents at the burner. So oil costs:

$$\frac{1{,}000{,}000}{147{,}000} \times .11 = .68 \text{ per } 1{,}00{,}000 \text{ Btu.}$$

Butane costs:

$$\frac{1{,}000{,}000}{103{,}000} \times .08 = .775 \text{ per } 1{,}00{,}000 \text{ Btu.}$$

On the above basis it appears that his fuel bill would increase about $\frac{.775}{.68} \times \$400 = \$455.00$. He may find, however, that other factors such as cleanliness, lack of maintenance, etc., may offset the difference in cost.—Ed.

•

Michigan

Kindly inform the writer if it is practical to haul gasoline or fuel oil in a propane transport which alternately hauls propane. Please touch upon the questions of product contamination and moisture.

R.L.M.

It is possible to haul gasoline or fuel oil in a propane transport, but there are several factors which tend to make it impractical.

1. Contamination of product. It will be necessary to remove all the propane vapors from the transport before gasoline or oil can be loaded. The main contamination from gasoline will be that which will remain in the transport after unloading. Generally the gasoline is fairly free of water and sediment, but this small amount of gasoline will be absorbed by the propane each time, gradually finding its way to the customer's tank and building up there as heavy ends.

Fuel oil will act in the same manner, and in addition will tend to contaminate the propane with water and sludge.

2. Overloading the transport. L. P. gas transports are usually calculated to haul a maximum load of propane or butane and yet not have a gross weight in excess of highway limitations. This is based on L. P. gas at 4.25 lbs. for propane or 4.86 for butane. Gasoline weighs 6.152 lbs. per gal. and fuel oil 7 to 8 lbs. per gal., depending on the grade. It is quite likely the transport would be overloaded while carrying gasoline or fuel oil unless compensation is made in the gallons carried.

3. Loss of pay load. L. P. gas transport tanks are relatively heavy compared to those used for gasoline and oil. Why have a truck carrying a tare load when it can be carrying pay load?

Would it not be possible to arrange for a lighter weight tank for gasoline and oil, designed for your transport, and to carry maximum gallonage of gasoline or oil? Construct the gasoline tank so it can be placed on the same truck chassis and change tanks when hauling gasoline instead of propane. The additional pay load should soon offset the cost.—Ed.

•

Connecticut

We have a 1949 Ford ¾-ton, 6-cylinder, four-speed truck that we recently purchased for L. P. gas delivery.

What advantage would we have in converting this to LPG carburetion, such as economy of operation? We get 11 miles per gallon of gasoline now. Could you also tell us the cost of converting it?

O.L.B.

Whether or not you could show economy by converting your Ford 6-cylinder truck to L. P. gas carburetion would depend primarily on what you pay for fuel.

If you are now getting 11 mpg on gasoline, you could expect to get between 9 and 10 on propane. You would need enough differential in fuel cost to make up for this loss in mileage, plus a further difference to offset the cost of conversion.

Cost of conversion depends on how you do the job. A special motor vehicle fuel tank will cost you between $40 and $90, depending on size and whether or not you can get a dealer's discount on it. An adapter type carburetor, with regulator and the necessary accessories, will cost you between $75 and $100.

Aside from fuel cost, there is a saving in oil and in maintenance cost. The latter is for the "long pull," and will not show up immediately. By the time the truck is 80,000 miles old, the maintenance saving should be clearly apparent.—Ed.

•

Minnesota

Please send us 10 copies of the last edition of *The Bottled Gas Manual* published by *Butane-Propane News*. The 10 copies which we recently ordered have been quickly distributed among our insured who are entering the propane gas field.

The need for education in this field is great, and we feel that by distributing this book much good can be accomplished.

MUTUAL SERVICE INS. COMPANIES, Claude C. Stubbe, Engineering Department.

•

Illinois

You advised "G.F." in the May, 1953, issue, "Letters" Department, that a compressor can be used for filling cylinders instead of a pump and will probably prove to do the job about as fast.

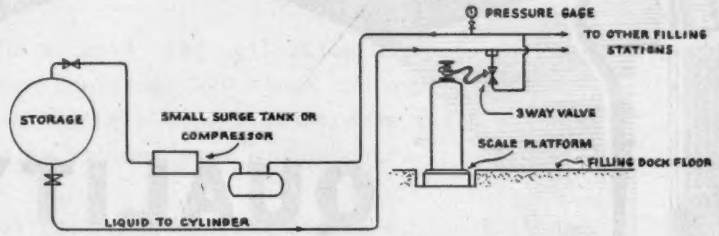
Now, we presume you have reference to the ordinary 100-lb. cylinder with one opening with POL valve installed. Now, we would appreciate information or drawing showing how to fill cylinders using a compressor with but one opening in cylinder to be filled.

W.W.

Many dealers who use a compressor or vapor pump to fill L. P. gas cylinders incorporate a 3-way valve in the system as illustrated in the accompanying drawing.

The 3-way valve is set so that the compressor draws the residual vapor from the cylinder. After the pressure has been reduced sufficiently (this will be ascertained by trial and experience) the 3-way valve is turned to a position which cuts off the vapor flow and allows the liquid to enter the cylinder. The pressure in the storage tank forces the liquid into the cylinder.

A surge tank in the vapor line between the cylinder connection and the compressor acts as a low pressure reservoir and will permit the filling operation to proceed with fewer starts and stops of the compressor.—Ed.



Iowa

We wish to have all of the information we can obtain in regard to L. P. gas. In case of regulator failure will the regulator let in more gas than can be consumed properly by the burner?

Also we would like to know the proper way to vent an installation.

C.L.S.

All approved L. P. gas low pressure regulators are constructed with a relief valve built into the low pressure side. It is designed to relieve pressures which may build up over about 1 lb. if the regulator fails to lock up properly. Most appliances will withstand pressures of 18 in. or 20 in. water column (1 lb. equals 27 W.C.) and burn the fuel properly. They will generally burn the gas at 1 lb. pressure for short periods of time without harmful results.

Venting should be carried out in a manner approved by the appliance manufacturer. The "Handbook Butane-Propane Gases" has a chapter which deals with this problem. Also the Metalbestos Division of the William Wallace Co., Belmont, Calif., has a booklet on venting which you can obtain by writing to them. The American Gas Assn. also has some bulletins describing proper venting procedures. You can obtain a list and prices of the bulletins by writing to them at 400 Lexington Ave., New York City.—Ed.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BPN Editorial Comment

FOR THE PAST SEVERAL MONTHS we have been collecting newspaper clippings reporting, or mis-reporting, LPG fires and explosions in trailers. It's amazing how many of these dispatches speak of "butane stove explosions"; or "butane tank explosions".

> We know a man who has been right in the middle of the butane business for 24 years. In his lifetime, he tells us, he has seen just one butane or LPG tank that had exploded, and that was a non-code tank without a manufacturer's nameplate. And how, we ask you, can a butane stove explode? About the only possibility is for the oven to get full of gas from a valve left open, and then be ignited by the occupant of the trailer. It's time for the industry to require the newspapers to report these accidents accurately.

Nearly all fires and explosions in trailers--and in homes too, for that matter--are the result of human ignorance or just plain carelessness. If Joe Doakes' trailer blows up, there's a reason. Nearly always, the reason is either Joe or some member of his family. If the newspapers took the trouble to establish the facts, and print them, they would be doing the public a service by reminding each person to be careful. As it is, our industry has to live under the handicap of unreliable reporting and distorted facts.

> Whenever one of these accidents occurs in your territory, you should make a personal investigation, and if the facts that you find are different than those in the newspaper report, go get something done. Don't bother to see the reporter or the editor. Go right up to the head office and see the publisher.

Ed.

LOOK INTO

The General De Luxe Water Heater

YOU'LL SEE WHY IT HEATS FASTER and SELLS faster. General's unique GENERISER heats water in a separate compartment below the storage tank, and rushes it directly to the hot water outlet in the TOP of the tank. Turn a faucet, get hot water RIGHT NOW, without running a lot of cold water first. The GENERISER saves gas, saves water, and prolongs life of the entire heater. No flame touches the storage tank. Fast circulation discourages lime from settling on bottom of the tank.

THE GENERISER IS TERRIFIC!

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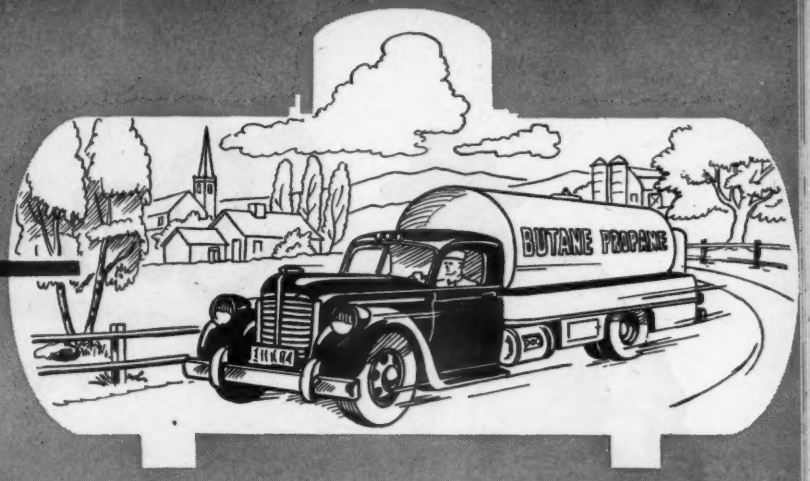
WATER HEATERS

IN ORDINARY TYPES →

heat is applied directly to tank, hot water must mix with cold before reaching outlet. Slow circulation allows lime to settle and harden on tank bottom, requiring more heat, more gas, and shortening life of the heater.

GENERAL WATER HEATER CORPORATION · MAKERS OF *GAS* WATER HEATERS AND RECESSED WALL HEATERS

BEYOND THE MAINS



Adequate Storage Is Still a Problem

The "adequate customer storage" campaign seems to be lagging in many parts of the country. The mildness of the past winter gave temporary relief from the critical necessity which caused the inception of the program. Dealers being human, many have eased the pressure from this project to devote more attention to other affairs of immediate importance.

Adequate storage all along the line up to the point of consumption is a form of insurance for future business, and for the protection of the industry against limitations of both weather and economic forces. It appears to be the only available method of insuring adequate winter fuel in areas where there is no compensating summer load.

A number of interesting side-lights have developed since the program was introduced by the National Committee for LP-Gas Promotion. First, the regions which are today in best shape as far as storage for winter needs is concerned are the tractor farming areas. They have the storage because they must have it to meet the summer demand.

In areas close to the point of production, there seems to be a pronounced tendency on the part of LPG distributor-dealers to substitute transportation equipment for permanent storage facilities. In many cases this seems to be of questionable economic value, since the equipment is in service for only a short period during the rush season. The same investment required for an extra transport at $15,000 and an extra bulk truck at $6000, if properly distributed between bulk plant and consumer storage, would make both vehicles unnecessary. The vehicles depreciate very quickly, while steel storage tanks last almost indefinitely.

It has also come to our attention that in some areas where enlarged consumer storage is urgently needed, the program has bogged down for competitive reasons. Where the more far-sighted dealers have sincerely tried to advance the program, and thereby secure the future for both themselves and the industry, competitive dealers who are willing to sacrifice the future of the industry for an immediate personal gain are undermining the efforts of the workers. They say to customers, "This large tank stuff is a bunch of hooey. We can supply all the gas you need through your present tanks." Comes a hard winter, these same gentlemen will no doubt be begging loads of fuel from any available source, including their local competitors. At that time the story will probably be, "Think of the future of the industry. We must not let these customers go cold."

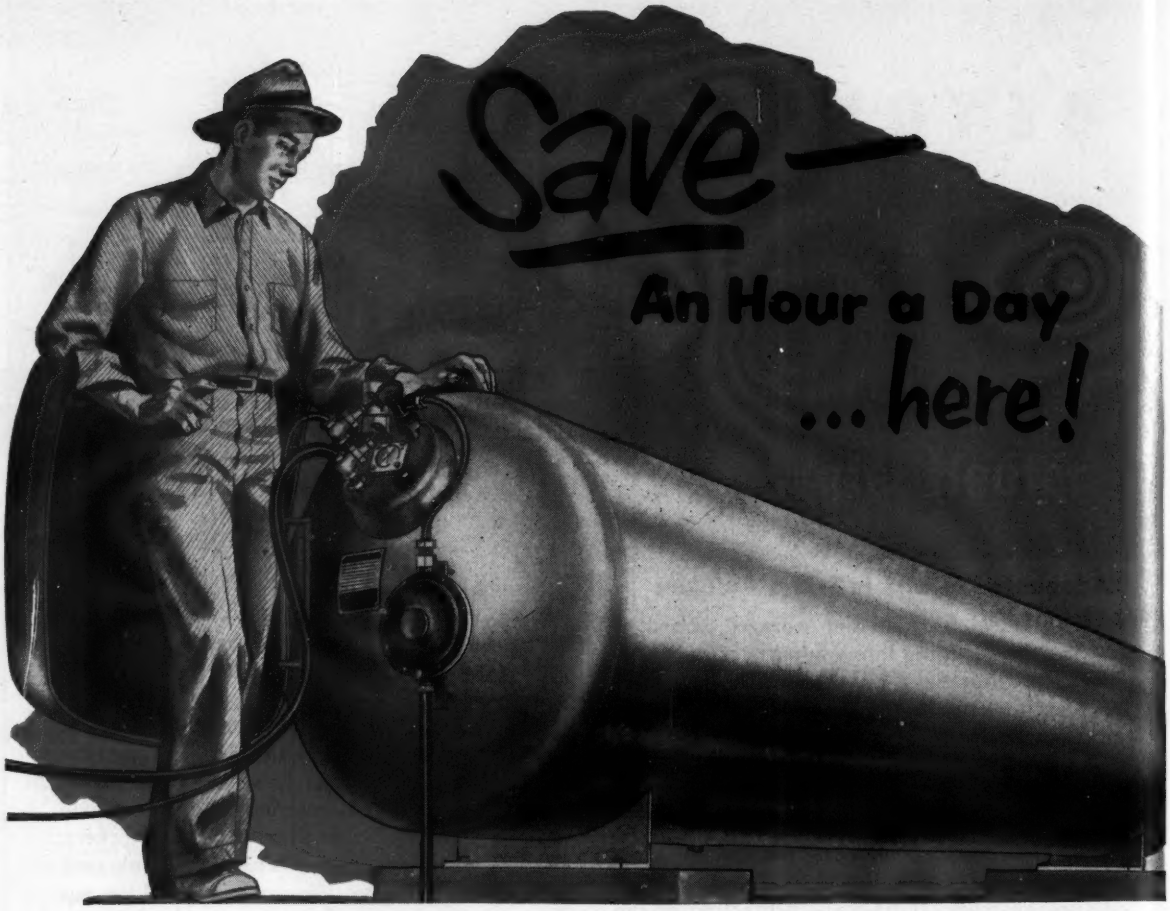
The time to make provision for winter needs is before winter sets in. And it still takes time to get delivery of tanks. We have not heard of any sizeable stocks of tanks "on the shelf".

People Don't Change

A long time ago, Elliott Taylor, writing in this magazine, said, "As far as the buying public is concerned, gas is just gas, whether it comes out of a pipe, or from a tank behind the house. They either like it, or they know little about it. If they do know about its virtues, they like it better than any other fuel."

It is still just as true as it was in those days.

Earl Abell



A. O. Smith dealers report an average saving of at least one full hour per day in servicing our "Vapor Dome" systems. Why should your route men have to climb on top of a tank . . . just to hook up a filler hose, or to read a gauge?

Servicing is a "Breeze" with our Vapor Dome tank . . . with all fittings, relief valve, and Visible Float Gauge in the streamlined Vapor Dome at the end of the tank.

OTHER VALUABLE FEATURES

Bottom Opening . . . to assure you of a "water-free" tank . . . also can be used for motor fuel tank refilling, or as a bottle gas station.

Visible Float Gauges . . . at "Eye-level" . . . easy to read from standing position.

Filler Hose Easily Attached . . . no "Rough-edged" curb box for your hose to rest on while filling the tank.

Welded Construction assures durability . . . long service life . . . as required by A.O. Smith exacting standards.

Guarantee in writing . . . attached to every tank when it leaves our plant . . . backed by the A.O. Smith Corporation, now in its seventy-ninth year of serving American Industry.

Regulator and pig-tail . . . installed so that gas leaving the houseline valve has direct downward flow all the way into service main.

Nation-wide warehousing . . . Direct delivery to your yard . . . Complete assortment of advertising material . . . Everything to help you sell the Vapor Dome System at a PROFIT!

A. O. Smith Liquid Gas Systems are available for early delivery in standard sizes up to 3500-gallon capacity. Orders for larger storage tanks accepted for future handling.

A.O. Smith Corporation
Dept. BP-953, Milwaukee 1, Wisconsin

Tell me all about the profit advantages that can be mine as an A.O. Smith Liquid Gas Systems Dealer.

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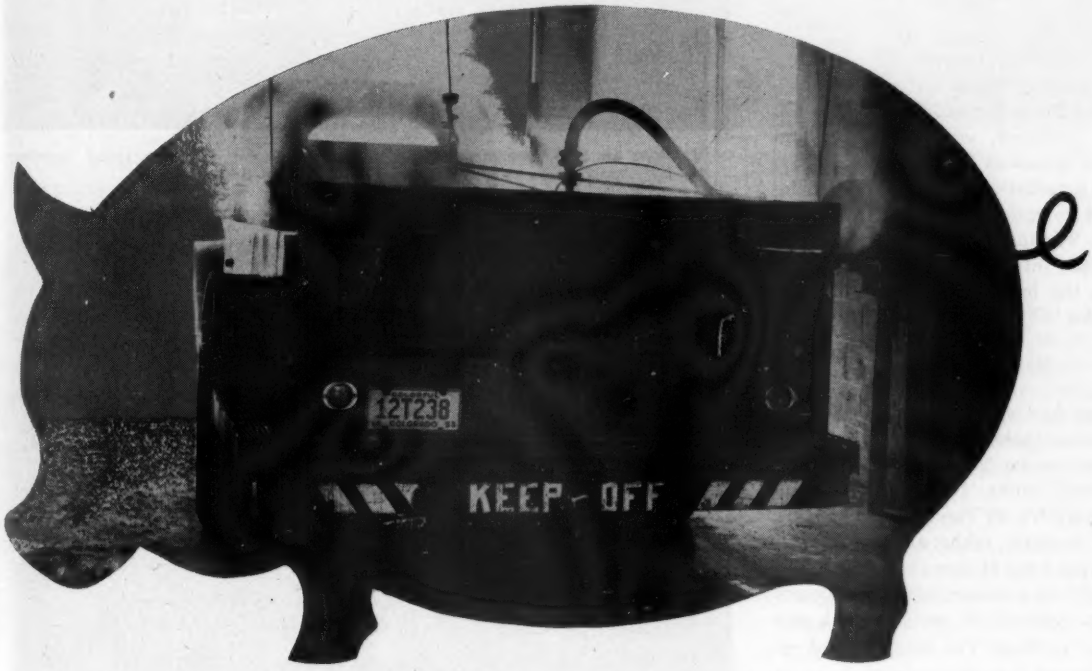
Pigs is Pigs Profits



Piggy's dinner is cooking — right in the garbage truck.

By J. Arthur Thompson

The nationwide fight against *trichinosis* is banning the feeding of uncooked garbage to hogs. Hog farms outside most of our cities offer substantial year-round fuel loads for enterprising L. P. gas distributors. This is another job that LPG does better.

LIKE every L. P. gas dealer, Robert Baum, president of the Red Dot L-P Gas Co. of Denver, dreamed of finding a customer, or several customers, with a steady, large volume consumption of LPG the year around. Baum keeps his mental "filler valves" in good working order all of the time, and he found his opportunity, of all places, in pigs!

Ellis Parker Butler produced a classic called "Pigs Is Pigs", but Bob Baum declares that "Pigs Is Profits".

To go into the background just a bit: various states, including Colorado, have stringent laws or regulations forbidding the shipment or sale of pork from hogs fed on raw garbage. Federal health agencies are heartily in accord with such regulations.

The reason is this: hogs fed on raw garbage almost invariably have trichinosis, a disease too little known to the general public and one which health authorities view with grim concern. A person eating some of this pork, particulalry if it has been improperly refrigerated and insufficiently cooked, is very likely to get the little worm known as trichina into his system. At Colorado Medical School it is estimated that from twenty to twenty-five percent of the human cadavers dissected were infected with trichinosis. (For further details, see your doctor, but 'tain't pleasant.)

When local health authorities in Denver cracked down on the sale of pork fed on raw garbage, a demand arose for a good, efficient, garbage cooking system. Red Dot L-P Gas Co., with the aid of local manufacturers, moved into the picture. In a short time all 20 of the local garbage feeding hog farms were equipped with L. P. gas-fired cookers.

Two different types of cookers were developed by two Denver manufacturers. One type, built by Eaton Metal Products Co., injects live

steam through coils on the bottom of the garbage truck body.

The Chris Jorgensen Ranch, a Red Dot customer, which feeds around three thousand hogs, was one of the first installations, and it is one of the most complete and efficient at this time. The installation may be divided roughly into four parts: the fuel system, the boiler, the cooker and the trucks.

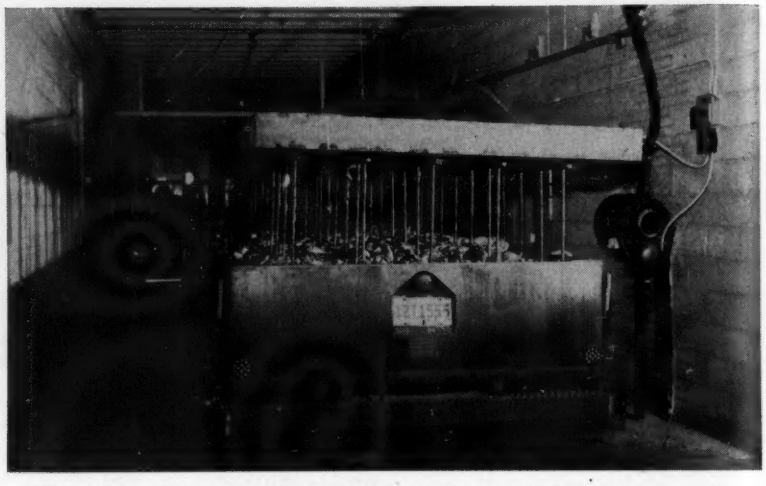
50 Cents Per Ton

The fuel system consists of three propane tanks manifolded together. There is one 500-gal. tank and two 1000-gal. tanks, together with a Mitchell No. 70 Vaporizer (70 g.p.h.) The cooking takes around 40 gallons per hour of operation. With fuel bought at commercial rates, it costs approximately 50 cents to cook one ton of garbage. The monthly fuel requirement is in the neighborhood of 2200 gallons.

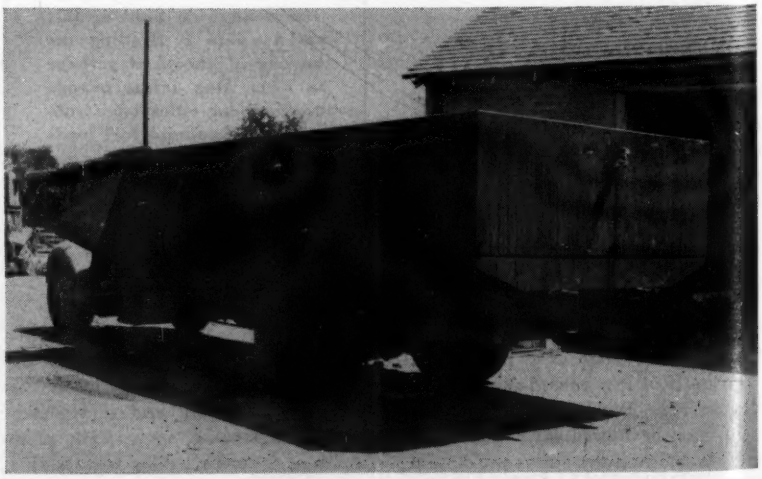
Denver has a rigorous climate, with long periods in the winter when the temperature is below freezing. There is also a winter surplus of butane, which has a higher Btu value than propane, but loses its pressure at 32° F. With the lower Btu cost, it is desirable to use butane instead of propane for these large installations, but it is necessary to supply pressure to move the butane from the storage tanks to the vaporizer during cold weather. This problem has been solved simply and inexpensively by filling the two 1000-gal. tanks with butane, and connecting them with the smaller tank filled with propane by means of a pipe manifold connecting the vapor spaces. This supplies ample pressure to feed the vaporizer in even the coldest weather.

The boiler is a 100 horsepower

Cookers on the Jorgensen hog ranch each have 60 jets manifolded together and supplied by a 100 hp butane-fired boiler.



The cooker is lowered into the truck load of garbage until the cover rests on the body. Steam coming out the jets cooks the load.



Special truck used on Alfred Krogh ranch. Steam coils in bottom of body cook the load. Built-in conveyors do the feeding.

Clayton, which is installed together with the necessary controls in an annex to the cooker house. Other makes of boilers are used in some of the other hog ranch installations.

The cooker, or steam injector, is approximately six feet wide and fourteen feet long. It is suspended from the ceiling, and an electric hoist raises or lowers it into position. Five rows of extra heavy one-inch pipe carry the steam from the inlet to the injector tubes, which are made of ⅜-in. extra heavy tubing. 3/64-in. holes have been drilled near the bottom end of the tubes to allow more live steam to penetrate the garbage. These tubes are 26-in. long and come within ¾-in. of the bottom of the truck body, which forms a "kettle" for the cooking operation. A heavy plate steel cover over the pipes forms the "lid". A large, high pressure steam hose carries the steam from the boiler piping to the cooker. There are two of these cookers, built by Eaton Metal Products, in the cooker house.

The ranch has five trucks with plate steel bodies in which garbage is collected and later cooked.

The load of garbage is brought to the ranch and driven under one of the steam injectors. The injector unit is lowered into place and the injector tubes forced through the load. It takes about forty minutes to cook a load. Between five and ten minutes are required to bring the garbage to cooking temperature, and regulations require that it be cooked for thirty minutes.

Piggy's dinner is done to perfection, and no scorching.

Dinner Is Served

Feeding the hot cooked garbage from these trucks, which are not equipped with mechanical unloaders, brought on a labor problem. The employes objected to working in the hot load, and it was uneconomical to keep help waiting while the tons of material cooled by natural methods. Wishing to completely mechanize the operation, the Jorgensens have developed a modified service station hoist which unloads the garbage into a transit-mix truck, from which it is distributed into the feed troughs.

On the Alfred Krogh ranch, another Red Dot customer, at Henderson, Colo., where 3500 hogs are fed, the Howry-Berg cooker is used.

Fuel storage on Jorgensen ranch. Propane in small tank (left) supplies winter pressure for butane in two larger tanks.

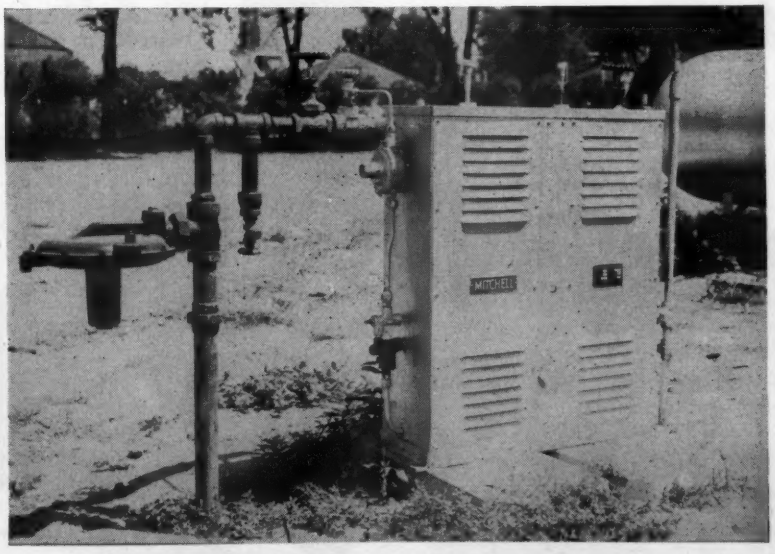
There are two types: one with a false truck bottom into which steam is fed, and another with steam coils on the bottom of the truck body. This latter is 8 ft. by 17 ft. by 36 in. deep, with capacity for eight tons of garbage. Cooking time is about the same as with the injector type.

A special feature of this truck is a conveyor on the bottom of the body hooked to a power takeoff, which brings all of the garbage to the front of the truck where a cross conveyor shoves it out and distributes it into the hog feeding troughs. According to the manufacturer's claims, one man can distribute a load of cooked garbage in ten minutes.

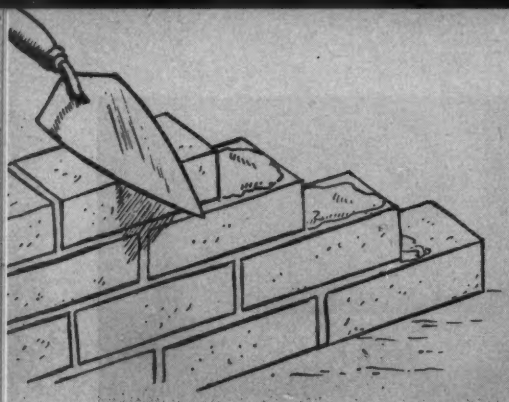
Garbage cooking has worked out to be one of those propositions where everybody gains. The hog feeder is able to comply with requirements in an efficient, yet economical manner. The LPG dealers, Red Dot and others, have a nice, dependable year around fuel demand.

And the piggies? They love it! Every bit of garbage is cleaned up even to the onion tops. They are really making hogs of themselves.

Pigs is pigs, but they are also PROFITS.



70 gph vaporizer supplies all the fuel that the 100 hp boiler can use in the garbage heating process.



The House That Joe Built

By Ernest W. Fair
Field Editor

BUILDING a gas business in a small town area is somewhat like building a structure of brick—thousands of parts are needed, and every one must be perfect in every detail, and each must contribute to the strength of the business as a whole.

Joe McKim figured that out five years ago when he started the L-P Gas & Euipment Co., 129 West Emma Avenue in Springdale, Ark., and the "bricks" he has used to build up a gallonage of 1,500,000 as compared with 900,000 in 1948, comprise one of the top business building stories anywhere, in or out of the gas business. In addition he has started a second firm, Blue Flame Gas Co., at Bentonville, north of Springdale, in partnership with his former sales manager, Joe Shackelford.

"We never sleep in this business—we never stop and rest—everyone in the organization is always looking for another idea that will build our business," Mr. McKim, past president of the Arkansas Butane Dealers Association, declares, "yet we never forget what we consider the basic principle of any dealer's business—close association with customers is the thing that makes or breaks you."

He also believes any dealership should give full attention to appliance merchandising and features Maytag, Servel, Coleman, Youngstown, Roper, Dubuque, Mohler, Hamilton and Tappan as his major lines while the Mix-O-Gas system, and a healthy bottled gas busines furnish supply for these appliances.

"The future in our business is fabulous—the surface has only been scratched," he declares, and sells this same enthusiasm to his entire staff, every person of which works to build business for the firm.

Most neglected phase of the business today with greatest possibilities is in bottled gas, Mr. McKim believes. The firm now has 450 twin-bottle hook-ups and expects to have 1500 within the next two years.

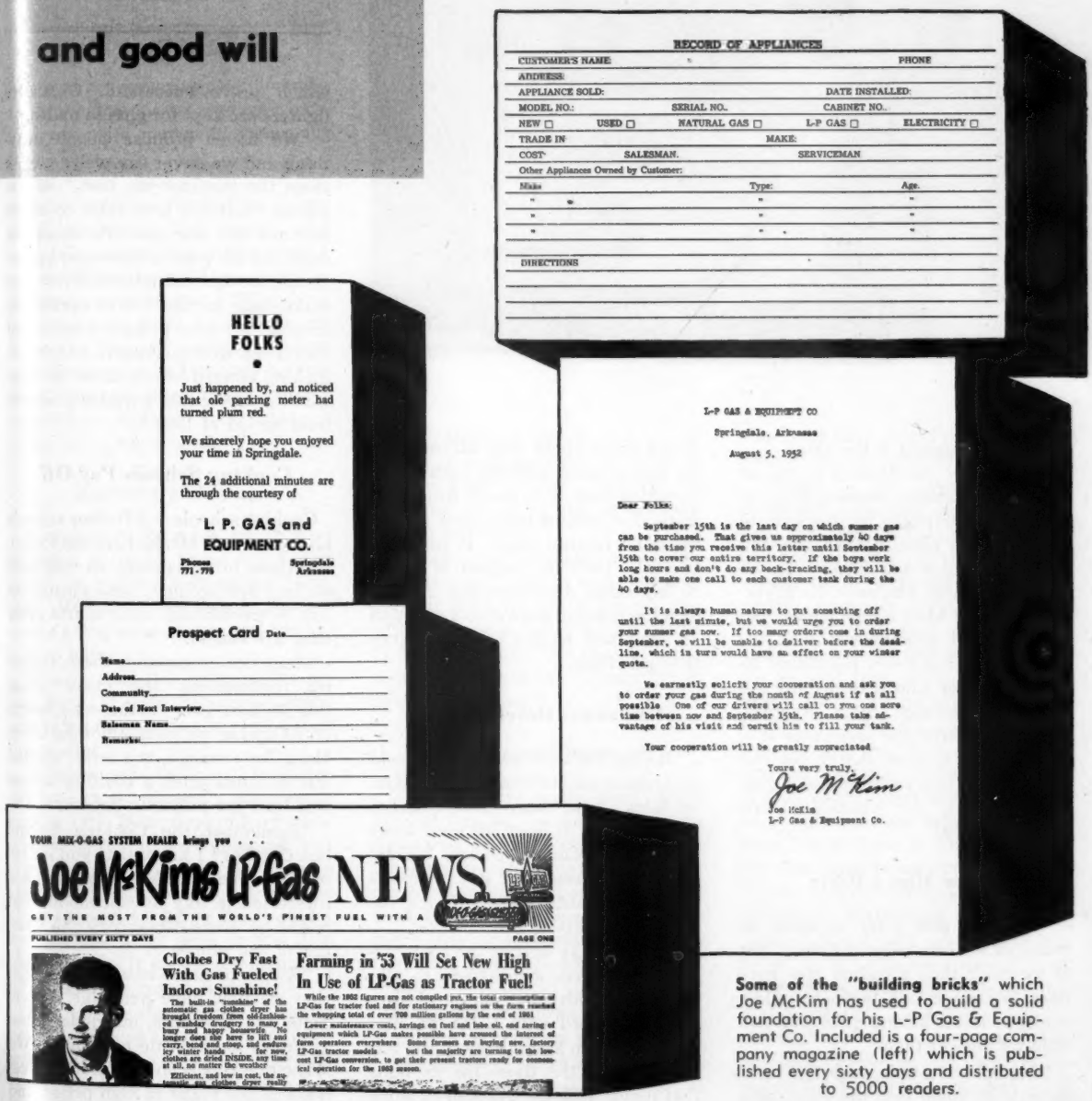
"It's easier to make sales with a bottle set-up than with a tank deal," he points out, "and in many areas we are down to income groups where every dollar counts, and they will think long and hard before making a tank set-up investment. Every one of those prospects is a bottle-gas prospect, however, and if we neglect them we may never have a second chance.

"Right now we're selling better than 250 sets a year and converting around 150 of these to tank installations shortly thereafter. I'm sure we would never have sold tanks at 50 of those places, no matter how much selling effort we put forth.

"Bottle gas is the opener—the entering wedge—your chance to prove all of these claims about gas being

Meet Joe McKim, builder of the business known as the L-P Gas & Equipment Co., Springdale, Ark.

with mechandising ideas and good will



RECORD OF APPLIANCES

CUSTOMER'S NAME PHONE

ADDRESS

APPLIANCE SOLD: DATE INSTALLED:

MODEL NO.: SERIAL NO. CABINET NO.

NEW ☐ USED ☐ NATURAL GAS ☐ L-P GAS ☐ ELECTRICITY ☐

TRADE IN MAKE:

COST SALESMAN. SERVICEMAN

Other Appliances Owned by Customer:

Make Type: Age.

DIRECTIONS

HELLO FOLKS

Just happened by, and noticed that ole parking meter had turned plum red.

We sincerely hope you enjoyed your time in Springdale.

The 24 additional minutes are through the courtesy of

L. P. GAS and EQUIPMENT CO.

Phones 771 - 775 Springdale Arkansas

Prospect Card Date

Name

Address

Community

Date of Next Interview

Salesman Name

Remarks

L-P GAS & EQUIPMENT CO

Springdale, Arkansas

August 5, 1952

Dear Folks:

September 15th is the last day on which summer gas can be purchased. That gives us approximately 40 days from the time you receive this letter until September 15th to cover our entire territory. If the boys work long hours and don't do any back-tracking, they will be able to make one call to each customer tank during the 40 days.

It is always human nature to put something off until the last minute, but we would urge you to order your summer gas now. If too many orders come in during September, we will be unable to deliver before the deadline, which in turn would have an effect on your winter quota.

We earnestly solicit your cooperation and ask you to order your gas during the month of August if at all possible One of our drivers will call on you one more time between now and September 15th. Please take advantage of his visit and credit him to fill your tank.

Your cooperation will be greatly appreciated

Yours very truly,

Joe McKim

Joe McKim
L-P Gas & Equipment Co.

YOUR MIX-O-GAS SYSTEM DEALER brings you . . .

Joe McKims LP-Gas NEWS

GET THE MOST FROM THE WORLD'S FINEST FUEL WITH A

PUBLISHED EVERY SIXTY DAYS PAGE ONE

Clothes Dry Fast With Gas Fueled Indoor Sunshine!

The built-in "sunshine" of the automatic gas clothes dryer has brought freedom from old-fashioned washday drudgery to many a busy and happy housewife. No longer does she have to lift and carry, bend and stoop, and endure icy winter hands for now, clothes are dried INSIDE, any time at all, no matter the weather

Efficient, and low in cost, the automatic gas clothes dryer really

Farming in '53 Will Set New High In Use of LP-Gas as Tractor Fuel!

While the 1952 figures are not compiled yet, the total consumption of LP-Gas for tractor fuel and for stationary engines on the farm reached the whopping total of over 700 million gallons by the end of 1951

Lower maintenance costs, savings on fuel and lube oil, and saving of equipment which LP-Gas makes possible have aroused the interest of farm operators everywhere Some farmers are buying new, factory LP-Gas tractor models but the majority are turning to the low-cost LP-Gas conversion, to get their present tractors ready for economical operation for the 1953 season.

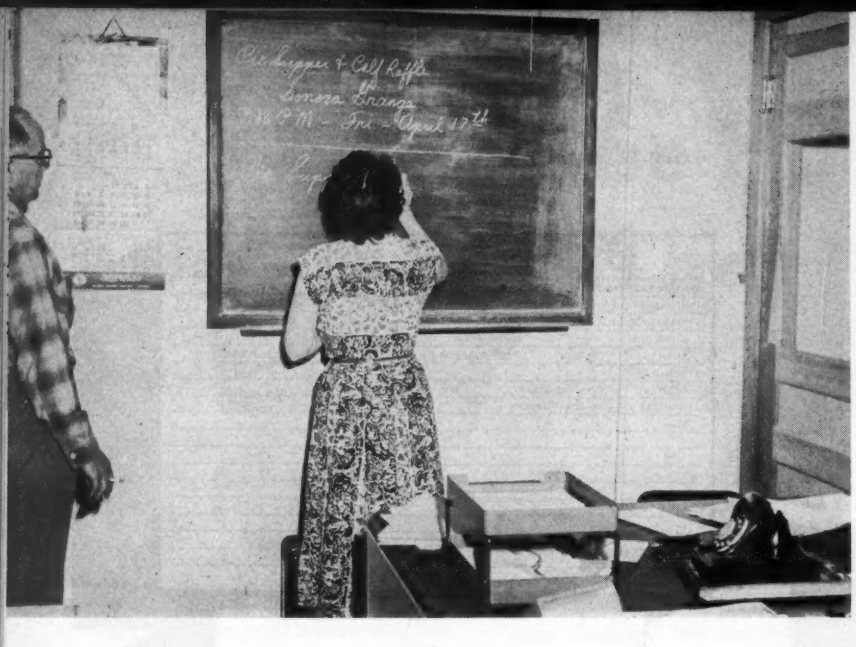
Some of the "building bricks" which Joe McKim has used to build a solid foundation for his L-P Gas & Equipment Co. Included is a four-page company magazine (left) which is published every sixty days and distributed to 5000 readers.

cheaper than electricity. It's easy to sell a range and bottle combination—difficult to sell a house full of appliances and a tank installation.

"We've found out that cooking with gas sells a lot quicker than suggested heating with gas, so we use range and bottle deals as our openers wherever it's obvious we would have a real struggle selling a tank installation. Our idea is to get that customer using gas in his home and using it with complete satisfaction . . . cooking does it easiest.

"We try and sell a CP range because its newer and safer and easier for a farmer's wife to learn how to cook with gas on this range than other types. We've found best price level to be on a $250 or better range and with a lease deal on the bottles whereby they pay only for the gas used. The bottles remain our property, of course."

Leads for such sales come from many sources. One of the best is in personnel of the firm attending and aiding every box supper, pie supper, school play, etc., put on anywhere in the area. Mrs. Corrine Jones, bookkeeper, reads every paper of the area serching for announcement of such events. When she finds one it is post-



Mrs. Jo Ellen McKim puts another "date" on the company blackboard used to record "coming social events." Looking on is Earl Fitzgerald, store manager.

ed on a blackboard in the office.

Then either Joe McKim or one of the sales personnel contacts those in charge and arranges for the firm to furnish a hot plate, bottled gas, coffee, cream, sugar and cups for the affair at no charge whatever. No advertising of any kind accompanies; not even a small announcement on the platform . . . but every individual attending knows who is furnishing the free coffee service. Such organizations are offered the service or it is presented at a small charge per cup of coffee, and every cent received goes into the "kitty" for which the affair is being staged.

Never Miss a Party

"My wife and I try to make as many as we can," Joe explains, "but if we can't then someone else here does. We never talk business unless someone starts asking questions and then we answer them.

"Almost every time we do this we'll have folks come into the store next day to thank us and tell us how much they appreciate our help . . . and then they see our appliances and our gas system displays. It pays off handsomely in more ways than one at very little cost."

Another sales builder is a periodic giveaway (about once each season) of a gas range at the store. Thousands of circulars are printed up and distributed all over the area. They tell folks that all they have to do is "come to the L-P Gas & Euipment Co., and register." A duplicator produced entry blank they fill out calls for listing name, address, community in which they live, check for which method of cooking being used (wood, kerosene, natural gas, L. P. gas, electricity), check for request of a free 10 day range demonstration in their own kitchen and answer to a question as what will be the next appliance they purchase.

Giveaways Develop Leads

"It's the cheapest way in the world we know to obtain leads," Mr. McKim explains, "and when you consider that we'll get at least 300 good leads out of each such give-away besides bringing thousands of gas prospects to our appliance store . . . it's the cheapest advertising we can do!"

This event as well as the social affairs previously mentioned are also promoted with the white pick-up truck equipped with a PA speaker which the firm keeps busy in the territory all of the time. He explains that it cost $325 for the firm to paint this truck white and equip it with the sound system, but that its selling ability makes it another good advertising investment.

Both system and appliance leads are obtained regularly from present customers who are never neglected and whom salesmen visit after their purchases just to keep the contact alive. A stock of items women like such as Pyrex dishes, oven baking bowls, wall flower holders, etc., are kept on hand for presentation to customers who give salesmen leads which prove successful. Cigarette lighters are kept for gifts to males.

"We never promise people anything and we never say we're giving them the item for the lead," he explains, "but it's presented to them because they are good friends of the firm, and we want to show our appreciation for their friendship. When you make deals for tips you're asking for trouble. We want to keep a feeling of friendship with customers and know making reward offers ahead of time won't promote that friendship over a long period of time."

Cooking Schools Pay Off

Cooking schools and freezer schools always pay off, Mr. McKim has found, and these bring as many as 1500 people into Springdale . . . and always result in tremendous sales spurts after they are staged.

Many dealers promote these, follow up registrations and make sales. Joe McKim goes further—he keeps on following up leads—months later. Here, for example, is a letter mailed out in April after a cooking school was held the previous October:

"Remember the Cooking School last October? I know that you do remember, and I also know that you are interested in any advancement that might be made concerning the wonderful gas ranges.

"We are proud to be able to tell you that we now have available a complete line of ranges, all models, and at prices for as little as $159.95. We know that this is an astounding statement in the midst of high prices and material shortages, and we firmly believe only Maytag could do it.

"Should you be interested in purchasing a new range we are enclosing a Purchaser's Guide for your convenience. If you will use it when you purchase a new gas range, you will not go wrong."

Does such a letter sell? It has never failed, Mr. McKim declares, simply because in any group there are always people who want lots of time to think over a conversion to gas and purchase of a range, who want to

Jim Smith, service manager, hands a report to Mrs. Connie Jones, bookkeeper, in keeping with the well-planned record and filing system developed by the company.

wait and see how the neighbor who did buy came out, or who may have to accumulate money to swing the deal.

Not every such promotion has gone perfectly for Joe McKim or any other dealer, for that matter, and what happens when a demonstration or school goes wrong? It happened to Joe last year when over a 1000 people came to Springdale to see a home economics "expert" conduct a freezer school sponsored by the firm—an "expert" who got stage fright, had no experience whatever and made a fiasco out of the school!

Righting a Wrong

Taking over the stage Joe McKim salvaged as much as he could, but knew there was a tremendous "sour taste" left from the fiasco. So two weeks afterwards he sent out the following letter:

"Please read this entire letter before laying it aside, because we want you to know just how we feel about this matter.

"I know you have not forgotten our freezer school which you attended May 14th. Many days of hard work and preparation and planning had gone into the program. We spent a considerable sum of money to put the show on, and we know that you did not get the good from it that you should have. It was a disappointing affair, and we regret it deeply.

"We built the entire program around the idea that we would have a top notch home economist. Certainly it is needless to say that the young lady who did appear on our program was inexperienced in conducting home freezer schools. It was our understanding that (name of woman) was a home economist of eight years experience and with an excellent background in program presentation. We knew no different until Wednesday afternoon—at the same time you made the discovery.

"We would not have encroached upon your good nature and asked you to spend your time with us if we had known we were unable to give you an educational program, and we offer our sincere apologies. We plan to conduct other schools in the future, and you have our assurance that they will be successful.

"If you would be so kind as to bring this letter with you on your next trip into our store, we would present you with the book entitled 'An Invitation To Better Living.' This book tells the complete story of the preparation of foods for freezing."

Books Bring Customers

The expensive books were given McKim free by the distributor who sponsored the home economist. Customers appreciated his approach and came to the store not only to get the book BUT—to tell Joe McKim how sorry they were things worked out the way they did—nearly 1000 of them!

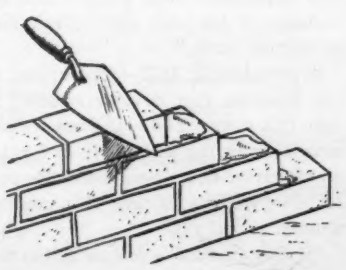
Every dealer knows the problems of getting early orders and purchases from customers of gas for their tanks are not easy to solve. It's not much of a problem with this Springdale firm because customers receive a constant stream of reminder letters from the firm, since Joe McKim believes that a duplicating machine in a dealer's office is something that should never be allowed to "cool off."

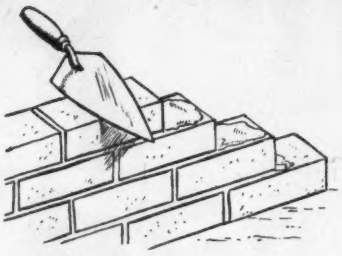
Here are excerpts from typical letters:

March 13, 1952—"I have just returned from Tulsa, Okla., where I spent several days in conference with the officials of the Phillips Petroleum Co. I am happy to tell you that I have signed contracts with Phillips for our 1952-1953 gas supply.

"There is one thing, however, about which I would want to caution each and every one of our customers. Our ability to give you the usual good service in the wintertime will be directly dependent upon whether or not we fill your tank this summer. Please do not let anyone else place gas in your tank unless you plan to look to them for next winter's supply. Certainly, if we fill your tank this summer, you may depend completely upon us for your wintertime supply. We are letting your tanks get as low as possible during March and will start filling them in April, which is the first summer month."

July 10, 1952—"Will you need BUTANE or PROPANE this coming winter? If you will, *please* read this letter. It is an earnest appeal from your gas supplier. He is in trouble and needs your assistance. . . . In order to protect our contracts with The Phillips Petroleum Co. and be in a position to furnish the fuel needed during the coming winter, we





must purchase certain quantities during these hot summer months. We need to have access to every available gallon of gas storage.

"We realize that no one needs very much gas now, but it does not evaporate, and certainly it will be needed during the cold months. If you have room for any gas in your tank now, it would help both of us if you would allow us to fill the tank.... When you are in trouble, you call your gas man. When we are in trouble, we call our gas customers. Please work with us by allowing us to fill your tank now.

"We are enclosing a stamped, addressed postcard for your convenience. If you do not return this card to us, we will call at your home within a few days to fill your tank. If for some reason you do not want your tank filled at this time, return the enclosed card immediately."

August 5, 1952—"September 15th is the last day on which summer gas can be purchased... If the boys work long hours and don't do any backtracking, they will be able to make one call to each customer tank during the 40 days.

"It is always human nature to put something off until the last minute, but we would urge you to order your summer gas now. If too many orders come in during September, we will be unable to deliver before the deadline, which in turn would have an effect on your winter quota.

"We earnestly solicit your cooperation and ask you to order your gas during the month of August if at all possible. One of our drivers will call on you one more time between now and September 15th. Please take advantage of his visit and permit him to fill your tank."

September 12, 1952—"According to our records, you have purchased to date this summer —— gallons of fuel, which according to the 1½ to 1 ratio on which we now operate entitles you to —— gallons during this coming winter.

"If this amount is not sufficient for your wintertime needs, you should contact us immediately. If your tank will hold any gas, you should contact us *now* for delivery before September 30th."

Every two months customers receive a four-page printed small newspaper "Joe McKim's LP Gas News" of which 5000 are distributed throughout the northwestern Arkansas area served by the Springdale firm. It features drivers and salesmen with their pictures and stories of the use of gas appliances in the home, on the farm, etc. In layout resembling advertisements copy stresses features of Mix-O-Gas system as well as fact comparison tables between cooking and heating with gas and with electricity.

"All of us in the industry have been slow on our feet in fighting electricity, particularly from the appliance angle," Joe McKim declares, "and as a result we now have to fight harder than ever.

"Right now we're planning construction of a big cost comparison board for our salesroom with electric lights thereon to show prospects relationships between gas and electricity consumption on each type of appliance and for each specific job. Presentations like that pay off. The industry needs a lot more of them."

Weekly Dinner for Employes

The firm has 15 employes, three gas trucks, one transport and one service truck. Three men work full time as salesmen. Every employe introduction to the firm is with a personal interview by Joe McKim in which he stresses that "when you come to work here at L-P Gas & Equipment Co., you are working with me—not for me."

And that attitude is carried throughout the organization. Each week unless prohibited by other activities, a steak dinner is held at one of the local restaurants where the company plays host to its employees. When a new youngster comes into the family he or she gets a $10 bank account starter from the firm.

In addition to the weekly business meetings which accompany the dinners, three 30-minute sessions are held during the week and everybody participates with problems, questions, answers, demonstrations, idea discussion.

Salesmen are paid a straight ten percent commisison and are encouraged to stabilize their income by retaining credits on the company ledger when they have good months. When they have a bad month they are permitted to draw on the account on only one condition—"that you don't owe me at the end of the year"—as Joe McKim tells them.

Each salesman files a daily sales report which shows each prospect's name and address, what they are a prospect for, who turned them in, number of previous calls, additional prospects obtained, time spent with each and remarks. Where service men provide a lead they get a two percent commission and the salesman gets eight percent.

"These daily sales reports keep salesmen on the ball and help them control their work," Mr. McKim explains, "and they are worth many times the trouble it takes to handle them. Our experience with this system has been so good that we wouldn't think of abandoning it and the salesmen like it very much because it helps them organize their work."

Usually four is the average number of previous calls the report will show, and it was found that sales last year resulted between two-and-a-half and three calls. Salesmen ask the prospect on every call for additional prospects . . . something they might forget if the report were not to be made out, he has found.

Each man is required to make at lease 15 new contacts a week. Whenever a prospect is secured by the salesman or anyone else connected with the firm, a 3x5 prospect card is filled out. It lists date, name, address, community, date of next interview, salesman's name and remarks. These are then tabbed by colors in a file drawer with each color or combination identifying the appliance or service for which the individual named is a prospect.

"Thus when we get ready to stage a range promotion event," Mr. McKim explains, "all we have to do is pull out the cards of that keyed color and we have a prospect list to work on right then and there."

The cards are filed alphabetically to provide additional use in locating names. Plenty of direct mail material is kept going out all of the time to prospects who indicate they will be in the market later for a particular appliance.

"Just let anyone tell us they are

thinking about buying a hot water heater, for example," he points out, "and that individual will get everything we can obtain on hot water heaters coming at them as fast as we can obtain it. When a person indicates he or she is a prospect there is a spark of interest there . . . our job is to kindle it into a sale."

Appliance Record Is Valuable

Another very successful file is made up of 5x8 cards headed "Record of Appliances" originated by service man Jim Smith. This shows customer's name, phone, address, appliance sold, date installed, model number, serial number, cabinet number, whether new or used, natural gas or L. P. gas or electricity, trade in and make, cost, salesman, serviceman, other appliances owned by customer and space for directions on how to reach the customer or on installation of appliances.

This is made from an installation and service daily record sheet kept by Mr. Smith which shows date, customer, serviceman, type of work, trade-in, completed, incompleted, which is designed as another record to keep "everybody on their toes and make certain every phase of our business is handled with maximum efficiency," according to Mr. McKim.

The service man makes the demonstration on a new installation and not the salesman. He spends at least thirty minutes with each new customer to make certain he or she fully understands L. P. gas or appliance usage, adjustment, safety, etc., for the firm has found that this time is amply repaid in better customer satisfaction with the gas installation or the new appliance.

Each truck driver has his own truck with his name on it and is the only one who carries a key to the truck except Mr. McKim himself. He keeps his truck clean and in condition. The result, particularly placing the man's name on his truck, is an increased feeling of pride and assurance that the truck always looks better and is kept in better condition.

Joe McKim uses his own "Markel" system to keep his drivers alert. From time to time he takes his camera or the magazine motion picture camera he has and shoots pictures of trucks and drivers on the road (as well as the bulk storage plant). When he finds something that should not be, all he has to do is show the picture to the man in charge—it's corrected immediately without any discussion or reprimand. Men on the trucks are given the same customer relations training salesmen receive and as a result they feel it a personal insult when they lose a customer (which seldom happens) and usually when one moves out they either immediately replace that customer with the new arrival or go out and find a replacement.

The training program of the National Committee For LP-Gas Promotion has been used in its entirety by this firm and Mr. McKim considers it "very good."

Credit is another place where a dealer must "build his house" with greatest care, Mr. McKim believes, and it receives the same careful attention as any other part of his business. Collections are made on one principle—"Get the money and retain the customer's friendship, but don't get the money if you have to lose that friendship."

Most appliance sale paper is sold to finance companies but in instances where collection problems arise, Mr. McKim picks up the paper and handles it himself, for he has found "most finance company collection methods are sure to lose very good customers who are only in temporary financial difficulties."

Big credit losses at L-P Gas & Equipment Co. don't exist because applications are screened very carefully before credit is granted. The desire to sell never over-rules judgement in passing on the customer's credit stability. Credit bureau reports, checks with other merchants, even long distance calls are used to secure such information, and many times this is done by office personnel while one of the salesmen is actually working on the sale.

"When it looks like we have the possibility of a sale the salesman involved tips off the office," he explains, "so while he's going ahead with his selling job we can make a credit check—that avoids those losses you're bound to get when you try to rush things too fast."

All of these "bricks" are part of the solid and substantial structure known as the L-P Gas & Equipment Co., at Springdale, Ark., but many more will be added in months to come to build it even higher for, as Joe McKim puts it, "—in this business you can never sit still—you have to keep building all of the time!"

Showroom features roster of "happy owners" on wall. This has strong psychological effect on prospective buyers when they spot the name of a neighbor who is a customer of the store.

Ditch Bank Burning Balances Load for Colorado LPG Distributor

By Carl Abell

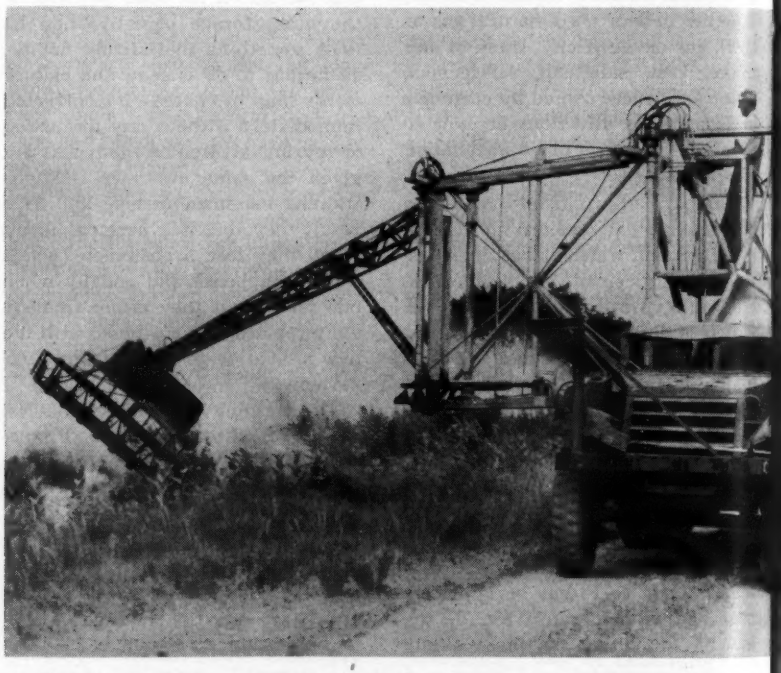
BURNING the weeds off the banks of irrigation ditches is the "hottest" opportunity for the L. P. gas distributor in the great irrigated areas of the West to balance his winter-summer load ratio, according to Weldon F. Kite, manager of Gas Supply & Appliance Co., La Junta, Colo.

Kite should know. Two years ago his company had such a bad ratio that they could not accept any more house heating accounts. Today thanks to the increased summer load developed through the operation of only five big mechanized ditchbank burners and about 20 flame-thrower type hand operated single burners, his load is in balance, and the company is able to take on as many domestic heating accounts as are available. By next summer, Gas Supply & Appliance Co. expects to put out more LPG in the summer than in the winter.

The fuel consumption of these big burning outfits is fantastic. A one-man outfit, mounted on a tractor and towing a 500-gal. supply tank, burns from 60 to 100 gals. per hour. The tank must be refilled twice each working day. The largest unit which the company supplies, a two-man rig mounted on a reconditioned army half-track, with 12 burners on the end of a 30 ft. boom, burns between 200 and 300 gals. per hour. It carries a 1000-gal. tank on the bed of the half-track, and must also be filled twice if it is to work a full day.

The single-burner hand outfits, used principally for clearing the small lateral ditches, consume from 12 to 20 gals. per hour. A 100 lb. cylinder supplies these pigmy rigs from one hour to an hour and a half, but during that time it clears a mile of ditch bank—approximately 8 to 10 times as much as could be covered by previously used methods.

Keeping the weeds and other growth out of the ditches and off the banks of the open-gravity irrigation systems of the West is a serious problem. Grass, weeds, and bushes trailing in the water, or growing up from the bottom of intermittently used ditches, first causes the water to slow down, and this reduces their capacity to deliver water. But worse than this, the slowing of the flow causes silt to deposit, so the ditch gradually fills up. If the growth can be eliminated, the ditch is practically self-cleaning.



There's a canal down in those weeds. Big Soil Conservation Service outfit clears both banks at once — burns 200 gal. of LPG per hour.

Chemical sprays have not been a satisfactory answer. Some of the most troublesome forms of growth, such as the various water grasses which grow right on the edge of the stream, are not controlled by light chemical treatment, and sufficiently heavy treatment to kill these plants would be likely to damage crops because of contamination of the irrigation water.

The customary means of control, which is the use of drag-line equipment to remove the silt, and hand labor to chop the weeds growing farther up the bank, is very expensive. It has been one of the most costly items involved in the delivery of irrigation water.

Burning the growth out with a high temperature flame overcomes most of these difficulties, costs only 10 to 15% as much, and offers certain other advantages which are not available with any other methods of ditchbank control. For example, dragglining a ditch destroys the seal which

has been built up by the slow deposition of silt in the surface layer. It takes time to re-establish this seal, and in the meantime vast quantities of water are lost through seepage. Cutting the sod off the banks exposes them to erosion, and until the new growth covers the banks again, every rain washes quantities of soil down into the ditch. By the time the banks are secure against erosion, it is necessary to go back and attack them with tools again.

The most luxurious growths of weeds in the irrigation areas occurs along the ditches and canals. They shed millions of seeds into the water, and these are carried into the fields to give the farmers a constant battle. Cleaning the ditches with tools does not destroy the weed seeds. They are still there to grow or to drift into the fields.

In these mechanical operations, great quantities of trash are left in the ditches, to drift against the wiers or accumulate in critical spots along the way. Patrolling the ditches to clean out this rubbish is an inevitable after-expense which follows every mechanical cleaning operation. In the main canals of the La Junta area, the cost of cleaning off the weeds and removing the silt by dragline and hand labor has been from $800 to $1100 per mile. The cleaning has been required, on the average, every third year. In some few locations, the job was required annually.

The Soil Conservation District is now cleaning these canals by burning the growth off the banks with the big 12-burner outfit previously mentioned. By this method they have eliminated all hand labor, and most of the dragline expense. The outfit works like a tremendous flame thrower, throwing a 2600° fire for several feet. Green or dry, the growth on the bank is consumed, leaving nothing but ashes to get into the water. Weed seeds are burned or scorched to death. Any insects hiding in the growth are killed. But the surface of the soil is not broken, and the network of roots remains to hold the dirt and prevent erosion.

Burner makes short work of jungle in ditch beside Colorado sugar beet field.

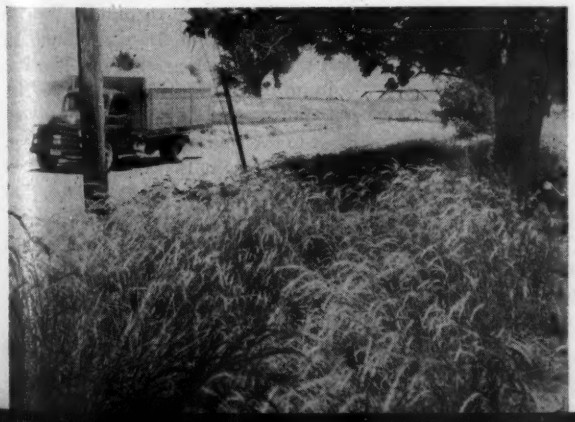
1 mph in Dense Growth

In the densest growth, the mechanized monsters are able to travel one mile per hour and burn a clean swath. After the first clean-off, the returning growth becomes less dense, and the operating speed may be stepped up to three or even in some cases four miles per hour. The local County Agent, and the farmers who were among the first to take advantage of the flame method of cleaning ditch-banks believe that after the third year of burning, the weed population in the fields is reduced at least 65%.

Another benefit which is of immense advantage to the whole area is the reduction of population of insects harmful to farm crops. These pests seem to concentrate in the dense growth along the ditches, and these areas seem to be their chief breeding grounds. This is particularly true of grasshoppers, which sometimes multiply so tremendously that they destroy practically all living plants in huge areas. The grasshopper hordes concentrate in the ditch areas in the spring, and the moving holocaust burns them by the millions. Mechanical cleaning of ditches does not kill the grasshoppers—it merely forces them to move to other hiding grounds—principally the fields.

The burning equipment used in this area was developed by Bob Strawn and Dick Pardee, both former employees of Gas Supply & Equipment Co. The business end is a single jet burner surrounded by a sleeve, after the manner of a blowtorch. The sleeve is made of heat-resistant metal, and is double-walled and hollow. This serves as a vaporizer, into which propane is fed at tank pressure. This eliminates the need for any regulators or separate vaporizers in the system, and is not only an important factor in the cost of the equipment, but also in its operation. The vaporized fuel comes out under high pressure, producing a long intensely hot flame. The roar of a single burner can be heard for

Before and after—heavy growth of grass is removed without affecting banks of roadside lateral.



Well toasted grasshoppers from square yard of burned-over ditch bank.

a long distance, and the big 12-burner job sounds like a jet plane taking off.

The burning equipment proved so successful that Strawn and Pardee withdrew from their former employment, and set up the Agricultural Equipment Corp. to manufacture and sell the burners and the complete mechanized outfits.

The backbone of Gas Supply & Appliance Co.'s burning program consists of two demonstrating units, one a single burner operated by hand from a pick-up truck with an old tractor tank for a mobile fuel supply, and the other, a tractor mounted job with a four-burner head pivoted on the end of a hydraulically controlled boom.

The pick-up outfit is used largely by salesmen, and for various civic and personal service jobs. When a salseman makes a call on a farmer, no matter what its purpose, he always lights up and demonstrates the burner, clearing out a patch of weeds if there is one convenient where it will not set fire to buildings or other combustible materials. Sales of burners have not been numerous, but the units in use are tremendous consumers of fuel. One of these units burns as much fuel in one full day's operation as the average domestic cylinder customer uses in a year. A few farmers use them for cleaning out their private ditches, and for burning weeds in other places, as well as for odd chores in which a large, intense flame is desirable. Some of these consumers get their propane in 100 lb. cylinders, and others who are able to transfer fuel from their large domestic or power fuel tanks use mobile type tanks obtained from various other sources. The local drive-in theater keeps the weeds in its parking area burned to the ground with one of these single-burner jobs, and the city of La Junta uses one to clear weeds from the parkways, vacant lots, and the municipal airport.

The Gas Supply & Appliance Co.'s tractor-mounted unit was first assembled for demonstration purposes. The burning unit, complete with hydraulic controls for the boom and burner head, cost $1017. It was installed on a used tractor which cost $800. A 500 gal. four wheel trailer unit with close coupled axles, of a type which the company had previously supplied to large tractor accounts, completed the outfit, and added about $400 to the cost.

Sales of the mechanized units were not brisk, as the only prospects for purchase in the vicinity were the large farmers, ditch companies, and the Soil Conservation Service. Demonstrations led to requests to clean ditches on a custom basis, so Kite arranged to handle this work for $6.00 per hour, plus the cost of the fuel. The outfit is busy most of the time during the spring and fall, bringing gross revenue of approximately $100 for a full day's work. Its cost was earned back before the first season was over.

Three similar outfits have been sold to date in the local territory, to ditch companies and to the American Crystal Sugar Co. This company owns tremendous acreage, and leases the land to farmers for the production of sugar beets. The company is obligated to supply water to the lessee, and must maintain its own ditches to make the delivery. Last year they took advantage of Kite's custom service, but early this spring took delivery of their own burner outfit. They had formerly required from 22 to 25 Mexican National laborers to keep their ditches open. With the machine the work is all done by one skilled farm hand, and the management states that their ditches have never been in such good condition. Their records show that the cost of operation is only 10% to 15% of the former cost of cleaning with dragline and hand labor. They have found that satisfactory control can be maintained by burning twice a year—once after growth starts in the spring, and again when the weed seeds have matured in the fall.

The Big Bertha of the business is the Soil Conservation Service half-track with the 12-burner head. This is used primarily to maintain the main canal and the larger laterals, but it is also available at cost to members who have large burning jobs to do. The rental basis is $8.00 per day plus cost of fuel. This base charge includes the wages of the two SCS employes who operate the unit.

After studying the results of the two and a half years since his first unit went into production, Kite is convinced that one of these standard tractor mounted ditch bank burning units kept reasonably busy through the season will consume as much L. P. gas as 50 average tractors. He points out that every irrigation district that distributes water in open ditches has a similar problem of ditch maintenance, and that the LPG distributors serving that territory have a similar opportunity to develop profitable extra gallonage which will go a long way toward establishing the desirable seasonal balance. Deliveries are large and frequent, bookkeeping expense is held at the minimum, and there are no credit problems or bad bills.

Sales Problem Simple

The sales problem is simple. The L. P. gas distributor can operate his own demonstrator as a custom unit at a handsome profit. The local irrigation districts or ditch companies are spending long hours trying to find ways to cut expenses. There are farm-care contractors almost everywhere who are logical prospects for units to add to their custom service. And there are the individual prospects for the single-burner hand outfits.

The original Gas Supply & Appliance Co. bulk plant in La Junta has proved inadequate to handle the increased volume of the weed burning fuel and the increased house heating volume that followed. A new 30,000-gal. storage tank is being erected close to the Phillips pipeline terminal, and the present 16,000-gal. plant will be moved over to the new location after the big tank is placed in service. After that, Kite says, just watch the smoke from his weed burning venture.

Metering LPG.

PART 2

Measuring Liquefied Petroleum Gas With Vapor Meters . . . .

Theory and Design of the Vapor Meter

By L. A. McGowan
Chief Engineer
Pittsburgh Du Bois Division
Rockwell Manufacturing Co.

THE best way to measure L. P. gas sold to a consumer is measurement of the gas after the liquid fuel has been vaporized. This measurement is accomplished by passing the fuel through a gas meter which measures the volume of the vapor in some predetermined unit of measurement.

To make this clear we will first consider some of the fundamental principles of design, operation and construction of positive displacement gas meters and their application to L. P. gas measurement.

Design and Operation

Displacement gas meters used in the measurement of L. P. gas are fundamentally "D" slide, multiple chamber meters. (Fig. 1) This fundamental principle of design has been proven successful by use in the measurement of manufactured and natural gas for 110 years. The operation of a meter is controlled by valves allowing gas to enter and exhaust from chambers in which there are moveable pistons called diaphragms. The opening and closing of these valves is controlled by a mechanism actuated by the movement of the diaphragms. The proper time of opening and closing of these valves is determined by the construction of the connecting linkage.

If each chamber admits and exhausts the same amount of gas at the same time its respective valve opens and closes, the volume of gas passing through the meter in one revolution is easily calculated by multiplying the volume displaced in any one chamber by the number of chambers in the meter. It may then be determined how many revolutions are required for one cubic foot. A gear train may then be designed to convert the revolutions of the meter to cubic feet and an index supplied to record the total volume.

A displacement gas meter has often been compared to a simple reciprocating steam engine in design. The efficient meter operates at the lowest possible differential and has two functions: first, to produce power to operate the meter index, and second, to measure accurately the volume of gas that passes through it.

When a burner is turned on, the pressure at the outlet of the meter is reduced. The meter is set in operation when this reduction in pressure is equal to the pressure required to start the meter. As the gas continues

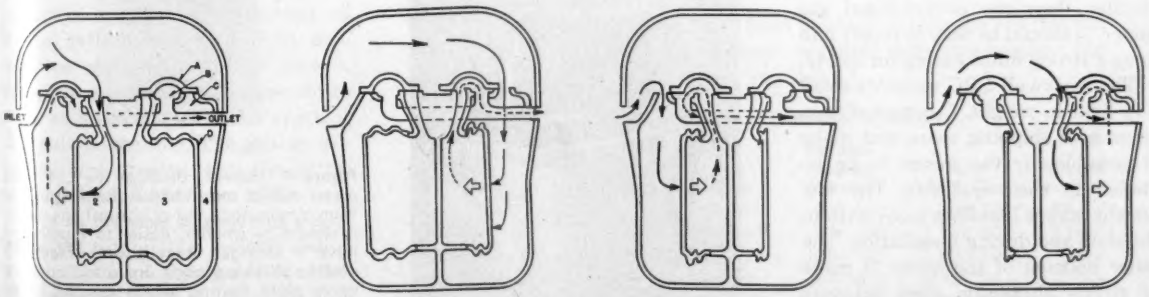


Figure 1. Relative diaphragm and valve positions in a diaphragm type gas meter.

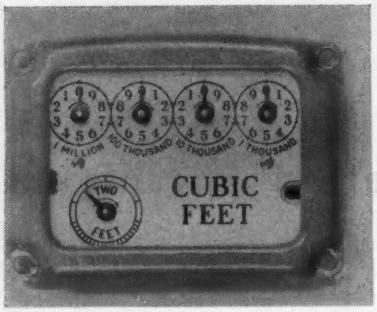


Figure 2.

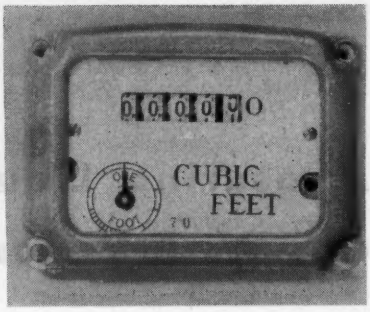


Figure 3.

to flow, it is this pressure differential from inlet to outlet that operates the meter. The gas under pressures follows the line of least resistance, which in this instance is to pass into the meter, fill and empty the chambers, operate the mechanism, and flow to the burner.

The gas is measured by a counting index (Figs. 2 and 3) which records the emptying and filling of the chambers. The power derived operates the index. Each revolution of the meter is translated to the index through the worm and gear mechanism to the proving hand of the index. From the proving hand gear trains in the index provide correct registration.

The capacity of a meter is the volume of gas which will pass through the meter in one hour if the meter were operating at a constant differential of one-half of one inch of water pressure between the inlet and outlet of the meter. This capacity is generally expressed in rate of flow per hour at ½-inch of water differential.

Construction

The Rockwell LPG meter (Fig. 4) is specifically constructed for measuring L. P. gas from bottled sets, storage tanks, and distribution systems to the home. Since L. P. gas has a much higher heating value than manufactured or natural gas, the ideal meter for this service should be smaller than the conventional gas meter. It should be easy to repair and have a strong outer casing for safety.

The Rockwell LPG meter is small and light in weight. Compact dimensions save shipping space and make it possible for the meter to be installed in close quarters. The low weight makes handling easy, both in the shop and during installation. The outer housing of the meter is made of strong aluminum alloy pressure castings in three parts—(1) bowl type body, (2) cover, and (3) handhole plate. These parts are rustproof, corrosion resistant, and have a high fracture resistance for safety.

The construction of the Rockwell LPG meter follows a time-proven pattern. All working parts are attached to a valve plate casting that can be lifted from a bowl-type body as a replaceable unit. (Fig. 5). Only two gaskets are required in the assembly of this meter, a main gasket which seals the valve plate between the body and cover and a handhole plate gasket on the cover. As an added convenience, lugs for hanging the meter are cast in the back of the body.

Selected leather is standard diaphragm material. This is a specially prepared leather particularly suited to the roll type, one-piece diaphragm. Diaphragm leathers are specially treated by a process apparatus that assures uniformly oiled leather. This not only improves diaphragm life, but permits the meter to hold its proof over a long period of service. Before installation, diaphragms are matched according to thickness and stiffness by means of a gage and a flexure tester. This matching assures balance and performance from the meter. Diaphragm discs are made from tin plate and are clamped to each side of the diaphragm leather. Steel wire is used to clamp the leather to the outer diaphragm pan. This wire and clamp is a separate unit to ease and facilitate repair procedures. The same diaphragm may be used for both front and back compartments.

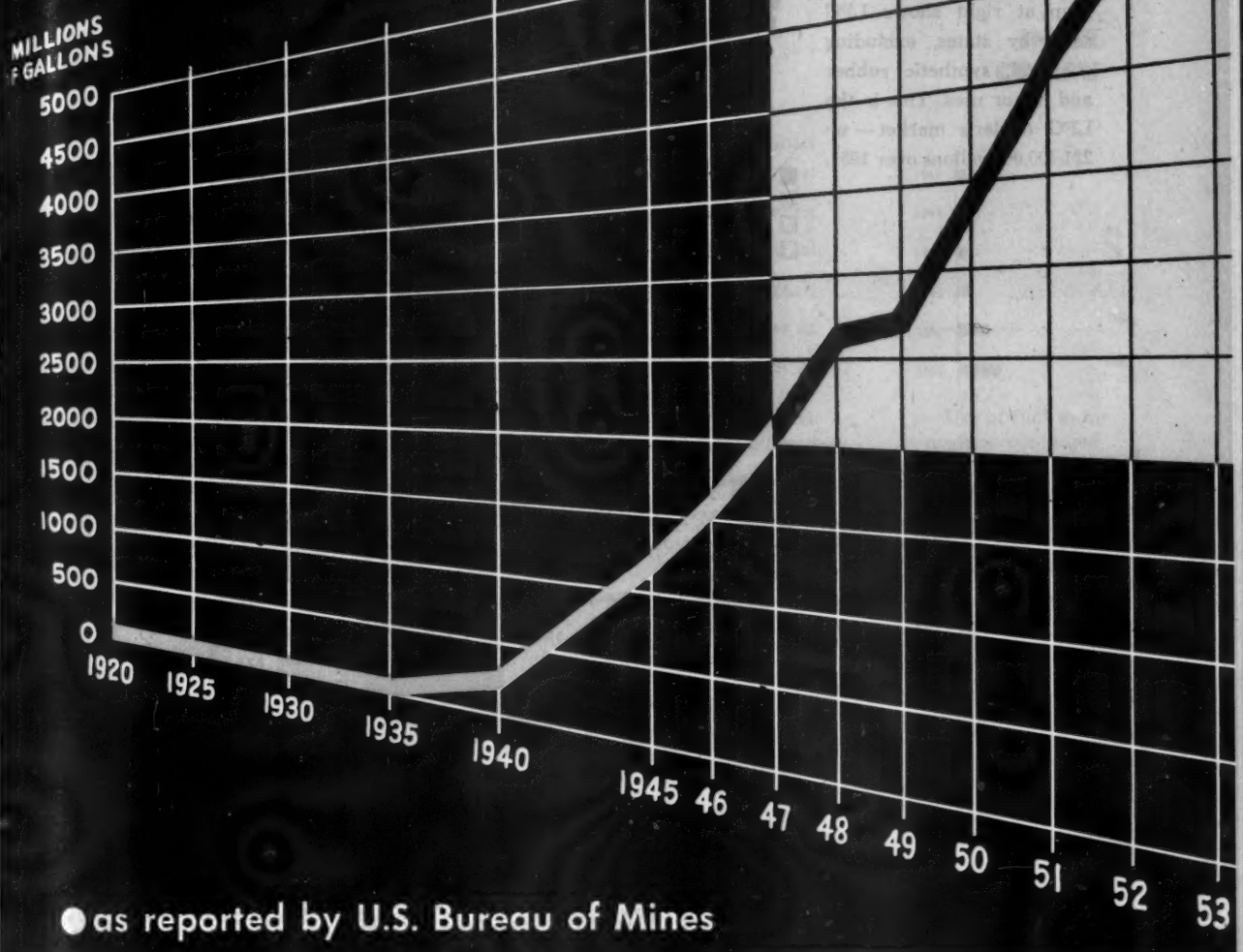
The meter index is housed in the cover in an aluminum die cast index box. One body to cover screw is enclosed in the index housing, thus eliminating the necessity for sealing the cover to the body with a seal wire.

Some L. P. gas distributors like to operate their own units of measure. Manufacturers of meters should be consulted before an operator makes this selection of a special unit or considerable confusion or extra expense may result if the manufacturer is required to build special gears and indexes. There is an important difference between the cubic foot meter and those with the type of measurement mentioned above. The cubic foot meter registers cubic feet and can be used with any gas. The indexes with special units give a correct reading only when used with the particular gas for which they were designed. A therm index designed for propane will not register therms correctly if used with butane.

L. P. gas meters on domestic service are usually installed down stream of a pressure regulator which maintains constant pressure of about 11 inches of water column at the meter inlet. Normal variations in atmospheric pressure are quite small and their effect on gas volume is correspondingly negligible. For this reason it is not customary to make pressure corrections when measurement is made at pressures close to atmospheric.

Figure 4 (above): Because the L. P. gas meter has a much higher heating value than a manufactured or natural gas meter it should be smaller, easier to repair and have a stronger outer casing. **Figure 5** (left): Working parts are attached to a valve plate casting which can be lifted from a bowl-type body as a replacable unit.

LPG Shows Gain for 31st Consecutive Year



● as reported by U.S. Bureau of Mines

THE 1952 sales record of the L. P. gas industry, as shown by the annual survey of the Bureau of Mines, reflects the thirty-first consecutive year of industry growth. While the percentage gain was not so great as in several previous years, it was still substantial. The gain in gallonage was greater than the entire marketed production for 1939.

As was the case in previous years, the latest compilation reflects changing conditions of supply and demand. The general trend in sales of both propane and butane-propane mix-

6 Postwar Years Show Greatest Increase

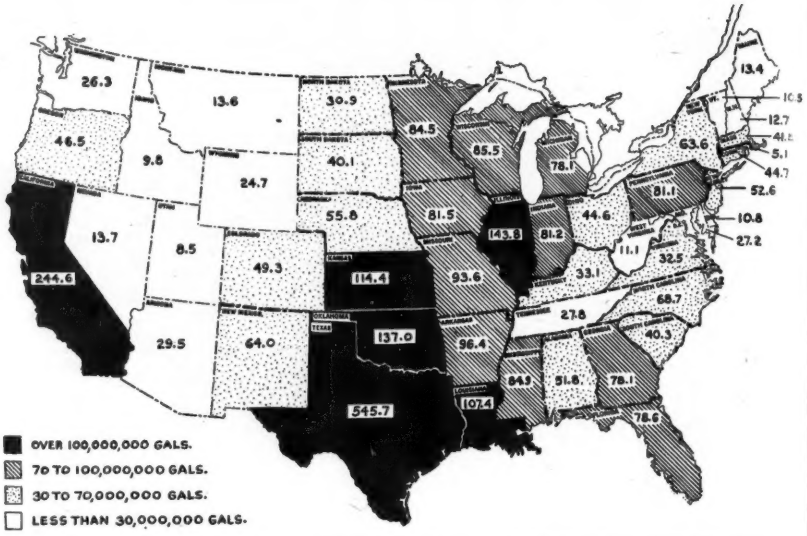
Sales of L. P. gas have more than doubled during the six postwar years. Propane and butane-propane mixtures show steady gains, but sales of butane have been up and down.

All figures listed in thousands of gallons.

Year	Butane	Propane	Butane-Propane Mixture	Total L. P. Gas	Percent Increase
1947.....	398,635	863,686	947,476	2,209,797	29.7
1948.....	512,615	1,279,744	944,442	2,736,801	23.8
1949.....	488,801	1,403,359	944,439	2,836,599	3.6
1950.....	568,038	1,938,301	976,228	3,482,567	22.8
1951.....	708,989	2,418,790	1,099,496	4,227,275	21.4
1952.....	639,282	2,513,595	1,324,502	4,477,379	5.9

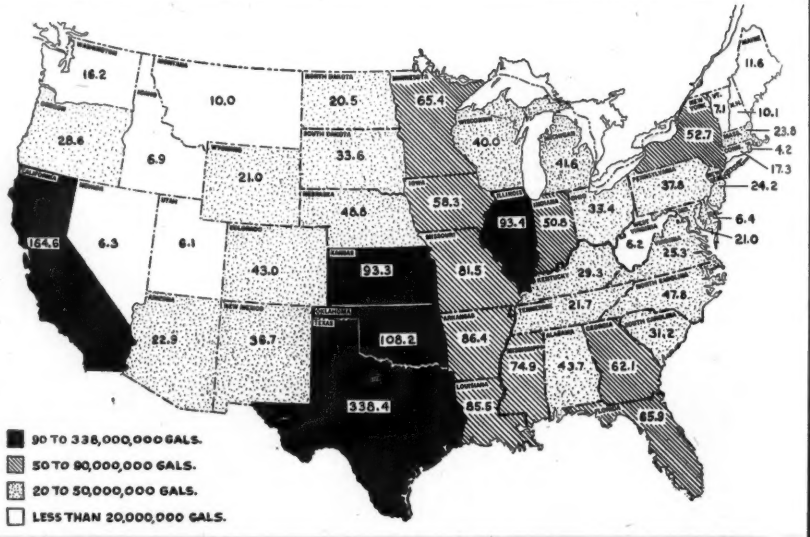
Total LPG Sales - 1952

Map at right shows LPG sales by states, excluding chemical, synthetic rubber and minor uses. This is the LPG dealer's market — up 221,400,000 gallons over 1951.



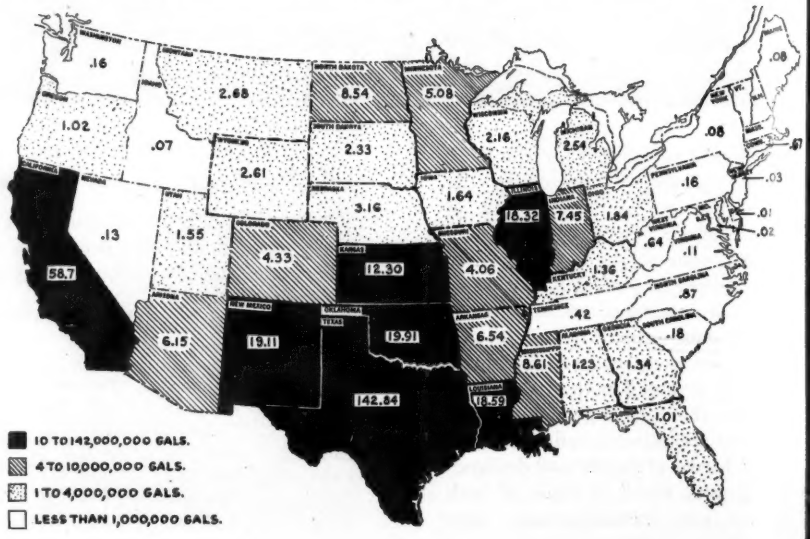
Domestic Uses - 1952

2,266,178,000 gallons of L.P. gases—50% of all marketed production in 1952 — were sold for domestic uses — a gain of 99,365,000 gallons over previous year.

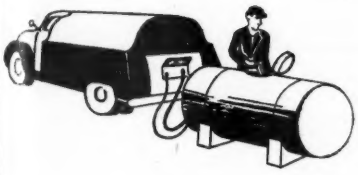


Engine Fuel Uses - 1952

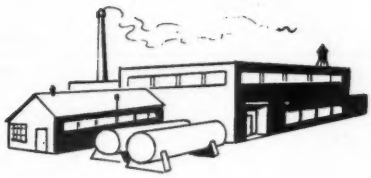
Since 1950, the engine fuel market for LPG has nearly tripled. Sales for internal combustion use hit 370,-558,000 gallons for 1952 — an increase of 28% over 1951 and 186% over 1950.



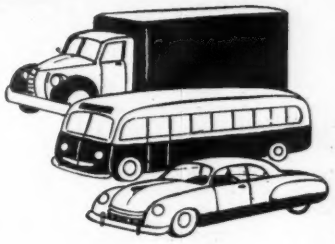
Trends in L.P.gas Sales by Principal Uses



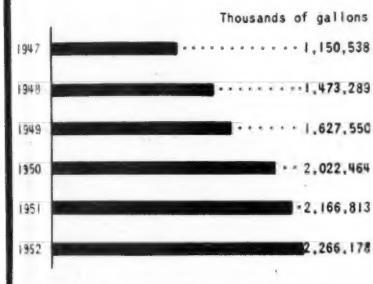
DOMESTIC



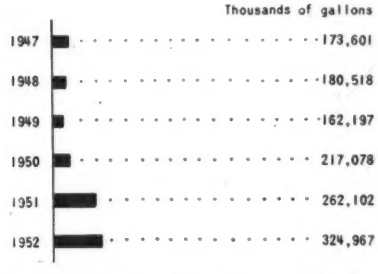
INDUSTRIAL



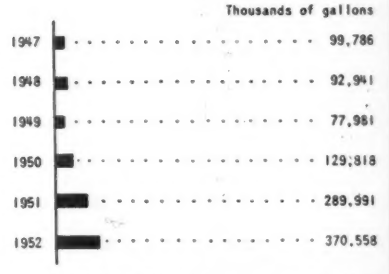
INTERNAL COMBUSTION



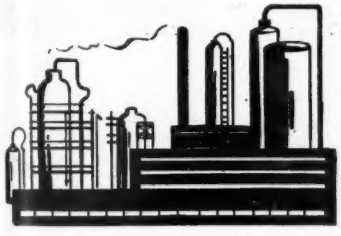
Domestic sales have always been the backbone of the L.P. gas business. Domestic consumption accounted for 50.6% of 1952 sales for all uses, with a gain of 99,365,000 gallons, or 4.6%, over the same class of uses in 1951.



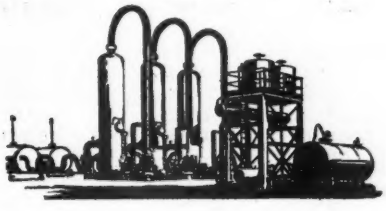
1952 use of L. P. gas for industrial heat, both as the regular fuel and for "standby" plants, showed a sharp gain of 24% over 1951. The increase was 62,365,000 gallons. Most of this load is in good winter/summer balance.



Use of fuel in internal combustion engines continued to be the fastest growing division of the market, with a gain of 28%—an increase of 80,567,000 gallons over 1951. Since 1947, engine fuel use of L. P. gas has more than tripled.

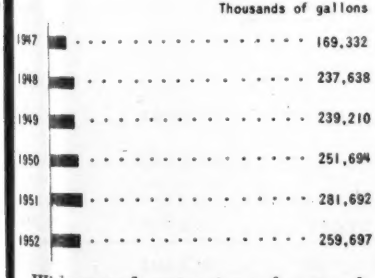


GAS MANUFACTURING

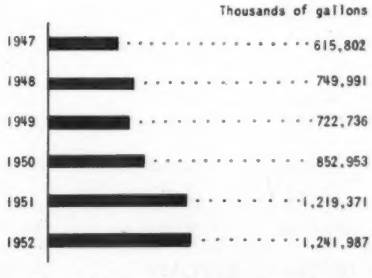


CHEMICAL AND SYNTHETIC RUBBER

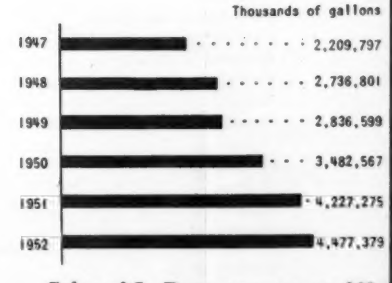
TOTAL - ALL USES



Widespread extension of natural gas pipe lines has led to the substitution of natural gas for L. P. gas in many piped town plants. Addition of new piped plants serving vaporized L. P. gas or gas-air mixtures has not offset the trend to natural gas. Loss, 7.8%.



Use of various L. P. gases in the production of synthetic rubber showed a slight decline, but increased demand for other chemical conversion processes continued to show a gain. Net result was an increase in consumption of 22,616,000 gallons.



Sales of L. P. gases were up 262,156,000 gallons in 1952, a gain of 6.1% over 1951. This was the 31st consecutive year of industry growth. While the 1952 percentage gain was less than normal, it was more than the entire marketed production in 1939.

● State by State Analysis of LPG Consumption for 1951 and 1952

State	Domestic		Internal Combustion		Industrial	
	1951	1952	1951	1952	1951	1952
Maine	11,349	11,655	76	81	491	616
New Hampshire	9,529	10,101	—	—	109	1,118
Vermont	6,098	7,122	—	—	374	541
Massachusetts	22,854	23,822	—	—	2,126	3,789
Rhode Island	5,150	4,227	—	—	556	670
Connecticut	16,612	17,285	620	671	13,527	12,619
New England	**71,592**	**74,212**	**696**	**752**	**17,183**	**19,353**
New York	52,866	52,694	9	76	3,022	5,616
Pennsylvania	38,403	37,820	278	156	20,502	21,363
New Jersey	30,691	24,202	19	27	26,263	23,498
Mid. Atlantic	**121,960**	**114,716**	**306**	**259**	**49,787**	**50,477**
West Virginia	6,299	6,207	620	637	4,077	3,606
Mayland and D. C.	20,239	21,038	—	20	1,458	2,554
Delaware	5,031	6,372	25	14	352	3,173
Virginia	25,069	25,289	32	107	1,938	3,317
North Carolina	44,614	47,867	1,047	872	1,950	4,249
South Carolina	29,817	31,200	64	179	3,231	4,304
Georgia	51,775	62,094	1,215	1,338	3,116	3,346
Florida	59,333	65,893	341	1,010	1,059	1,098
So. Atlantic	**242,177**	**265,960**	**3,344**	**4,177**	**17,181**	**25,647**
Ohio	31,447	33,422	1,372	1,841	4,909	6,298
Indiana	45,283	50,817	2,688	7,453	7,028	10,267
Illinois	96,800	93,368	17,072	18,320	22,342	22,231
Michigan	42,892	41,622	2,011	2,543	23,302	19,881
Wisconsin	41,853	40,000	1,599	2,164	30,122	33,135
E. No. Central	**258,275**	**259,229**	**24,742**	**32,321**	**87,703**	**91,812**
Minnesota	55,279	65,416	4,144	5,080	5,072	4,810
Iowa	49,781	58,293	581	1,636	5,358	8,086
Missouri	68,501	81,463	1,434	4,057	4,270	4,904
North Dakota	20,516	20,458	1,486	8,536	528	162
South Dakota	32,158	33,572	2,006	2,326	1,216	1,024
Nebraska	42,375	48,808	1,591	3,162	1,484	1,470
Kansas	79,567	93,337	12,730	12,300	6,272	8,622
W. No. Central	**348,177**	**401,347**	**23,972**	**37,097**	**24,200**	**29,078**
Kentucky	26,489	29,269	1,064	1,355	1,364	1,055
Tennessee	22,554	21,738	224	415	543	2,338
Alabama	41,892	43,771	1,007	1,226	3,864	4,354
Mississippi	53,903	74,930	8,009	8,607	1,282	1,200
E. So. Central	**144,838**	**169,708**	**10,304**	**11,603**	**7,053**	**8,947**
Oklahoma	105,131	108,227	19,105	19,911	5,672	7,336
Arkansas	73,946	86,449	4,338	6,543	2,856	2,984
Louisiana	128,913	85,496	15,907	18,594	4,794	2,735
Texas	347,269	338,442	120,382	142,837	28,752	58,551
W. So. Central	**655,259**	**618,614**	**159,732**	**187,885**	**42,074**	**71,606**
Montana	9,681	10,015	719	2,680	620	383
Idaho	5,540	6,891	43	65	427	521
Wyoming	19,536	20,998	3,388	2,613	1,565	1,073
Colorado	37,322	43,028	1,640	4,325	706	941
New Mexico	44,698	36,741	7,091	19,105	332	3,576
Arizona	19,137	22,942	3,527	6,150	149	209
Utah	3,030	6,129	582	1,551	200	638
Nevada	4,475	6,324	108	128	484	1,058
Mountain	**143,419**	**153,068**	**17,098**	**36,617**	**4,483**	**8,399**
Washington	11,866	16,156	18	161	2,682	2,802
Oregon	26,252	28,594	187	1,015	2,389	2,052
California	142,998	164,574	49,592	58,671	7,367	14,794
Pacific	**181,116**	**209,324**	**49,797**	**59,847**	**12,438**	**19,648**
TOTAL U. S.	**2,166,813**	**2,266,178**	**289,991**	**370,558**	**262,102**	**324,967**

(All figures in thousands of gallons)

Gas Mfg.		Chemical and Rubber		Other		Total	
1951	1952	1951	1952	1951	1952	1951	1952
461	1,011	—	—	—	54	12,377	13,417
1,165	1,472	—	—	—	25	10,803	12,716
2,009	2,799	—	—	—	—	8,481	10,462
10,947	14,208	—	11	39	269	35,966	42,099
4	158	—	—	—	—	5,710	5,055
6,056	14,128	11	126	232	1,682	37,058	46,511
20,642	**33,776**	**11**	**137**	**271**	**2,030**	**110,395**	**130,260**
6,178	5,260	1,231	2,366	13	10	63,319	66,022
17,633	21,739	10,676	8,290	38	67	87,530	89,435
7,926	4,871	3,210	4,105	281	342	68,390	57,045
31,737	**31,870**	**15,117**	**14,761**	**332**	**419**	**219,239**	**212,502**
1,560	654	140,562	183,436	—	—	153,118	194,540
3,059	3,542	—	—	125	70	24,881	27,224
2,176	1,256	933	932	—	3	8,517	11,750
4,482	3,782	62	113	—	—	31,583	32,608
16,702	15,703	21	—	197	261	64,531	68,952
6,650	4,653	—	—	110	49	39,872	40,385
9,900	11,284	175	172	209	155	66,390	78,389
6,658	10,611	—	—	4	65	67,395	78,677
51,187	**51,485**	**141,753**	**184,653**	**645**	**603**	**456,287**	**532,525**
6,012	3,034	1,132	921	38	21	44,910	45,537
20,445	12,712	36,400	26,445	688	690	112,532	108,384
17,388	9,904	1,329	4,360	379	409	155,310	148,592
27,814	14,058	2,645	3,240	15	3	98,679	81,347
9,481	10,154	—	1	49	233	83,104	85,687
81,140	**49,862**	**41,506**	**34,967**	**1,169**	**1,356**	**494,535**	**469,547**
7,812	9,173	—	40	44	4	72,351	84,523
9,741	13,527	—	—	9	313	65,470	81,855
4,466	3,218	—	—	22	167	78,693	93,809
2,156	1,753	—	—	130	135	24,816	31,044
3,839	3,139	—	16	240	292	39,459	40,369
2,225	2,328	—	—	220	71	47,895	55,839
92	109	911	—	122	162	99,694	114,530
30,331	**33,247**	**911**	**56**	**787**	**1,144**	**428,378**	**501,969**
1,508	1,375	51,505	54,285	62	20	81,992	87,359
4,102	3,312	44	2,289	85	125	27,552	30,217
2,934	2,475	—	—	11	47	49,708	51,873
73	115	—	—	9	1,256	63,276	86,108
8,617	**7,277**	**51,549**	**56,574**	**167**	**1,448**	**222,528**	**255,557**
2,239	1,552	375	911	207	—	132,729	137,937
489	388	—	—	745	772	82,374	97,136
688	574	170,881	199,818	62	20	321,245	307,237
3,665	5,853	712,290	667,268	242	2,269	1,212,600	1,215,220
7,081	**8,367**	**883,546**	**867,997**	**1,256**	**3,061**	**1,748,948**	**1,757,530**
508	527	—	—	20	—	11,548	13,605
4,930	2,370	—	—	—	48	10,940	9,895
—	—	2	—	—	—	24,491	24,684
1,538	1,051	—	—	132	155	41,338	49,500
5,444	4,607	—	—	1,295	861	58,860	64,890
510	155	—	—	—	—	23,323	29,456
200	220	—	27	39	103	4,051	8,668
5,039	6,203	—	47	—	20	10,106	13,780
18,169	**15,133**	**2**	**74**	**1,486**	**1,187**	**184,657**	**214,478**
8,999	7,215	—	—	14	64	23,579	26,398
11,081	14,846	—	—	178	93	40,087	46,600
12,708	6,619	84,976	82,768	1,001	2,587	298,642	330,013
32,788	**28,680**	**84,976**	**82,768**	**1,193**	**2,744**	**362,308**	**403,011**
281,692	**259,697**	**1,219,371**	**1,241,987**	**7,306**	**13,992**	**4,227,275**	**4,477,379**
				Exports		**87,244**	**99,296**
				GRAND TOTAL		**4,314,519**	**4,576,675**

tures has been upward, but the volume of straight butane sales for the postwar years has been erratically up and down, both in total gallonage and in percentage of marketed products.

The past year's sales of butane through the retail marketing channels were down 14.3%. The sharpest declines occurred in the Gulf Coast and the Pacific Coast States. Butane is in great demand to improve the volatility of gasoline, and great quantities are used particularly in the production of aviation gasoline. Our greatest concentrations of refineries producing aviation gasoline are in these two regions. The heightened tempo of the war in Korea, and the phenomenal growth of commercial aviation, contributed to a great increase in demand for butane for the production of gasoline. No figures reflecting this demand are shown in the Bureau of Mines report, but it has been the general belief in the industry that butane would be gradually diverted to the refining and chemical industries, and would no longer be available for sale through retail channels.

It is interesting to note that the states which showed an actual loss in gallonage for 1952 are nearly all located along the Atlantic Coast, and in the Gulf Coast and Mississippi Valley group. These losses reflect the effects of a mild winter, and in the latter group, the results of the worst drought in years. The extension of natural gas service to many new communities is also an important factor in this loss of sales. One of the surprising features of the report is that there is no consistent correlation between the loss of sales for gas manufacturing and the total domestic consumption. Indiana, for example, lost 37.8% in use for gas manufacturing, but gained 12.2% in domestic consumption. New Jersey lost 14.9% in gas manufacturing, and also lost 21.1% in domestic consumption. Ohio lost 49.5% in gas manufacturing, but gained 6.3% in domestic use.

Relative Percentage of Principal Uses

Year	Domestic	Chemical	Synthetic Rubber	Internal Combustion	Industrial	Gas Mfg.	All Other
1947	52.1	18.7	9.1	4.5	7.9	7.7	*
1948	53.8	19.1	8.3	3.4	6.6	8.7	0.1
1949	57.4	19.2	6.3	2.7	5.7	8.4	0.3
1950	58.1	17.9	6.6	3.7	6.2	7.2	0.3
1951	51.2	20.0	8.9	6.8	6.2	6.7	0.2
1952	50.6	19.4	8.3	8.3	7.3	5.8	0.3

*Less than .05%.

Exports by Country

Country	1947	1948	1949	1950	1951	1952*
Argentina	8	290	546	54	—	—
Bermuda	198	269	282	322	405	417
Brazil	1,570	1,720	3,405	4,686	6,413	11,046
Canada	31,591	26,681	31,195	34,032	43,293	42,951
Cuba	59	259	463	1,264	2,228	3,408
France	2,082	**	**	639	1,265	**
Mexico	16,471	15,497	16,120	25,415	31,976	40,003
Philippines	402	568	894	751	783	528
Other countries	852	236	478	600	881	943
Total	53,233	45,520	53,383	67,763	87,244	99,296

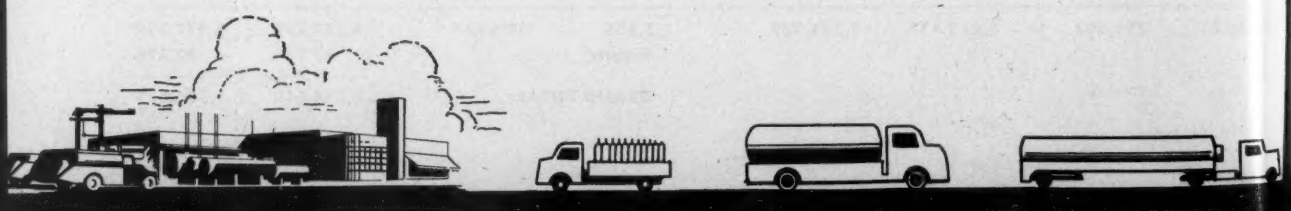
All figures in thousands of gallons (converted from lbs. to gal. at 4.5 per gal.) *Preliminary. **Less than 500 gals.; included with "Other Countries."

Utah topped all states in the percentage of gain—113% over 1951. Dealers in this state doubled their sales for domestic uses, and tripled their industrial and internal combustion fuel markets in the 12-month period. At the same time, Utah showed a 10% gain in use for gas manufacture.

Use of L. P. gas as internal combustion engine fuel continued its record as the fastest growing division of the market, with a gain of 28%. The major puzzle in this category is the loss of 16.7% of the motor fuel gallonage in North Carolina, and a gain of 179.7% in South Carolina. North Dakota almost made the big league by running up an increase of 474.4%, to reach 8,536,000 gallons, which is two-thirds of the consumption in Kansas, which incidentally, is the only one of the big tractor states that did not show a gain in 1952. The importance of the developing tractor consumption cannot be overlooked in connection with the industry's efforts to balance the winter/summer ratio.

Industrial consumption of L. P. gas is running almost neck-and-neck with carburetion in gallonage consumed. This division chalked up a 24% gain in 1952. For the most part, this represents relatively uniform consumption throughout the year — good steady volume for any distributor who is in position to line up the business. Texas tops the list in this division, with 58,551,000 gallons, representing a gain of 103.6%. There are 26 states in which total sales for all purposes did not reach this figure.

The Bureau of Mines report indicates definite progress in broadening the business, and in building for a more stable future.



Safety Tip

THERE are few safety precautions for the LPG industry that are more important to follow than those pertaining to purging cylinders and tanks.

Knowing how to purge and then not failing to do so fortifies the dealer against certain types of accidents.

Pressed Steel Tank Co., Milwaukee, anxious to contribute to safe operation in the industry, frequently prepares bulletins on various phases of cylinder care. Below is one of these on cylinder purging.

If you are not on the mailing list to receive these valuable tips, they are available upon request.

ON: RECOMMENDED METHODS OF PURGING CYLINDERS

Why Purging Is Necessary . . .

Your new LP-Gas Cylinders—or cylinders you're putting back into service after storage or re-testing—will contain air, which must be removed, or purged, before the cylinders are filled. If not removed, the air builds up much higher pressures than the normal vapor pressure, thus causing unnecessary pumping effort during the filling process. Air in the cylinder also dilutes vapor and makes it impossible to adjust appliances correctly.

Recommended Purging Procedure . . .

Vapor from a storage tank or tank car can be easily and economically used for purging cylinders, according to recommendations from the engineering departments of some of the largest refiners and distributors of LP-Gas. These authorities suggest:

1. That the filling room piping include a purging manifold for vapor-charging two to four cylinders at a time. Additional valves on this manifold will enable the same hoses to be used for charging and also for discharging the air-gas mixture. The outlet or blow-off line *must* be piped to the outside and exhausted at a safe point.
2. That cylinders be charged with vapor to a pressure anywhere from 15 pounds to 50 pounds gauge—or up to storage tank pressure in warm weather.
3. That cylinders then be let down to atmospheric pressure.
4. That the charging and discharging process be repeated for a total of three or four times.
5. That cylinders filled for the *first time* after purging should be blown-off for a few seconds to remove the last traces of air content in the vapor space.

Alternate Purging Procedure...When a gas purging manifold is not available, liquid can be used for purging. When using liquid:

1. Add only enough to raise cylinder pressure nearly to storage tank pressure—or about two pounds of liquid for a 100 pound propane capacity cylinder.
2. Blow the cylinder down to atmospheric pressure, piping the exhaust gas off to a safe place outside.
3. Repeat the process of charging with liquid and discharging at least once.

a word of caution:

When liquid is used for purging, the instant vaporization which takes place will perhaps condense water vapor, if any, that may be present in the air inside the cylinder, and then, later on, these drops of water may be the cause of freeze-ups.

For this reason, and also because of economy in the amount of LP-Gas required for vapor purging, you will usually find it best to install and use a vapor purging manifold.

Purging Cylinders Out of Service . . .

Cylinders removed from service—either permanently or temporarily or to be returned to a manufacturer for repair—should be purged of any LP-Gas remaining in them. Where water is available and disposal is no problem, a water purge is good. However, displaced gases must be burned or piped away to a safe place, and cylinders should be thoroughly dried before being returned to service. Tips on how to dry cylinders will be covered in a future issue of CYLINDER TIPS.

YOUR RULES TO REMEMBER:

1. Install a gas purging manifold and use vapor to purge air from cylinders going into service.
2. Cylinders charged for the first time (after purging) should be blown off for a few seconds to remove last traces of air.
3. Use a water purge to expel gas when removing cylinders from service.

Suggested Program for Safety Meeting

1 — Have those present sign the sheet, and note any absentees.
2 — Bring the crowd up-to-date on the handling of any safety suggestions that may have been made, and give personal credit to those who made them.
3 — Bring out any new suggestions or proposals affecting the safety of the operation, and decide what to do about them.
4 — Discuss "Let's Make Every Venting Installation Safe", which appeared in the August issue.
5 — Announce date, subject, sources of material, and study assignments for the next safety meeting.

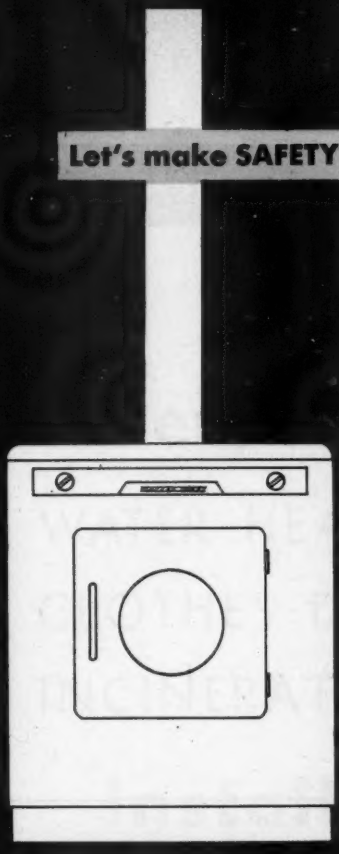
DISCUSSION GUIDE FOR "Safe Venting Installations"

1. We suggest that since this is a rather technical subject, the service foreman or the best qualified individual on the staff should take over, and explain and demonstrate the principles of venting.
2. For demonstration units he will need the regular units used in installations—pieces of vent materials of types A, B, and C, so he can explain the differences and show the insulating structure of the type B. (A hollow tile or cement block will illustrate the type A). Draft hood, rain cap, and clean-out tee should also be included.
3. To illustrate many phases of the operation of a vent, three sections of flue material, connected by two elbows, and arranged as they would be in an actual installation, are quite effective. Using a small but smoky fire, which can be built in an empty service station grease bucket or some such utensil equipped with a draft hole and smoke outlet, the flue can be held over the outlet, and tipped from side to side to show the effect of having the horizontal runner sloped up and sloped down, etc. A small pinwheel held over the outlet of the flue will give visible demonstration of the change of pace. The effect of the draft hood may be shown by inserting it in the correct place under a vertical section of vent, and directing the blast of an electric fan down the flue.
4. The effect of inadequate air to support combustion may be shown by partially covering the draft door, with a fresh charge of dampened shavings or wilted leaves on the fire to produce plenty of smoke. Have the men note the change in odor of the smoke as the air supply is reduced. This may be done by catching smoke in an inverted can, and sniffing it. The sharp smell accompanying the partial combustion comes from aldehydes and related products of incomplete combustion.
5. Demonstrate the effect on the fire of restricting the outlet. The pinwheel over the flue adds to the dramatic value of this demonstration.
6. With a thermometer, the difference in outside temperature of the Type B and Type C flues may be clearly shown—this may be made even more dramatic by using an ell made up from two sections of vent tubing and an ell, and dripping water on the far end of the horizontal section. The effect of the ventilated thimble may also be shown by slipping one over the flue and holding the bulb next to the flue, and then next to the outer wall of the thimble.

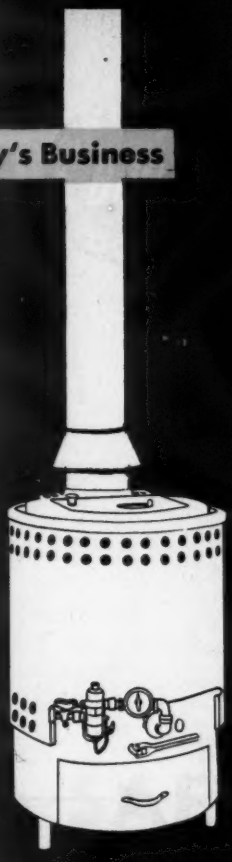
All demonstrations should be carefully planned and rehearsed in advance, so all needed materials and equipment will be on hand, and so the man conducting the demonstration knows exactly what he is going to show, and how to get the desired results. This part of the program should be carefully timed, to hold it within the limit set by the meeting schedule.

Let's make SAFETY Everybody's Business

Water Heaters



Clothes Dryers



Incinerators

Let's make every Installation Safe

SAFETY BPN PROGRAM

SAFETY MEETING

Date _____

Time _____

Place _____

The poster on the other side of this page is for your use in announcing the Safety Meeting covering

"Let's Make Every Water Heater, Clothes Dryer and Incinerator Installation Safe"

(See opposite page)

Fill in date and hour of your meeting, and pin on bulletin board.

* ***Another poster comes next month.***

Let's Make Every

- WATER HEATER
- CLOTHES DRYER
- INCINERATOR

Installation SAFE

The material in this discussion is based upon LPGA Pamphlet No. 1, Section 7, Water Heaters; Section 16, Clothes Dryers; and Section 17, Incinerators.

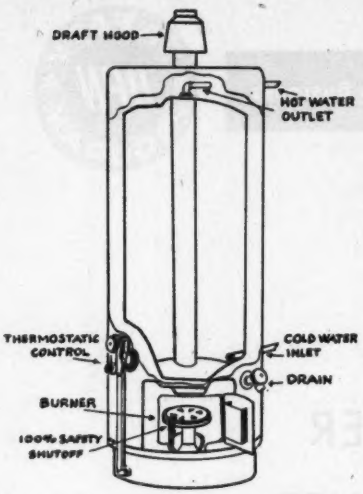
by Carl Abell

In the installation of water heaters, clothes dryers, and gas fired incinerators, we are confronted with the same basic safety problems that we met in connection with ranges and heating equipment. We must protect the customer and his premises against fires which might result from too close proximity of combustible materials or construction to the heated portions of the appliances. We must provide suitable precautions against the escape of gas, either through leaks in the piping and connections, or through the burners when no flame is present. We must see that the appliances have sufficient air to support complete combustion, and the burners must be designed and adjusted so complete combustion takes place. Any of these appliances which burn gas in considerable quantities, should be vented to remove products of combustion from living quarters. Finally, any burner which goes on and off automatically, lighting from a pilot, should be of the complete shut-off type, so there will be no escape of gas in case the pilot goes out.

The "Recommended Good Practices," for the installation of these appliances, as noted in LPGA Pamphlet No. 1, are reproduced herewith. Let us consider them, beginning with water heaters.

In thinking of water heaters, most of us are inclined to consider only the automatic storage type. There are two other types which are installed in sufficient numbers that the AGA tests and lists them under approved numbers. These are the circulating tank heaters (generally called "side-arm" heaters) and the instantaneous type, which have no storage tanks. The latter type is equipped with a pilot light, and a pressure controlled gas valve which opens to the main burner whenever a hot water valve in the system is opened.

All water heaters having burner inputs of more than 5000 Btu per hour should be vented. As indicated in 7 (a), the standard venting practices previously discussed in connection with space heating should be followed. This makes specific reference to installations in bedrooms and bathrooms, which are frequently closed when they are occupied. It omits mention of heaters installed in other parts of the house. It is quite general practice for state and local building codes to include the requirement that all water heaters in occupied buildings shall be vented. Even where this requirement is not in



The automatic storage heater offers the best combination of convenience and economy for the average home. It should have full automatic pilot, 100% shut-off.

force, most authorities regard venting of all water heaters as desirable. Even in case specific conditions do not require venting from the health standpoint, the release of such a large amount of water vapor in the burned gases is likely to result in condensation problems during periods of wet weather. While this is not specifically a safety problem in all cases, such as in large rooms that are normally well ventilated, it can result in customer dissatisfaction, which leads to sales resistance. From the overall standpoint, it therefore becomes desirable to vent every water heater in quarters which are primarily used for human occupancy.

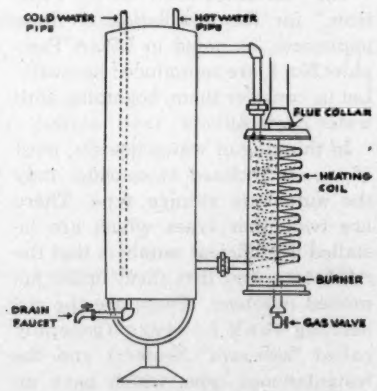
Paragraph 7 (c) emphasizes the clearances required for listed and unlisted water heaters in relation to combustible construction, and also the necessity for providing adequate air for the operation of the burner, and accessible location so any future service work may be accomplished without difficulty. In a great many of the newer houses, a special enclosure is constructed to house the water heater. These are sometimes built with minimum permissible clearance as defined in the local code, based on the use of a heater which, for considerations of price, is as small as the traffic will bear. This is particularly likely to be the case in the quantity production housing projects. Some of the purchasers may wish to replace their original heaters with others of larger capacity, which calls for consideration of the clearances within the enclosure, as well as provision of adequate air supply for combustion, and for cooling of the enclosed space. As previously indicated in the assignment on furnaces, the inlet and outlet registers for supplying the air for combustion and ventilation of the enclosure should be at least 1 sq. in. for each 1000 Btu of burner input.

Table 2 gives the recommended clearances for *listed* gas fired water heaters. There will be cases in which you will be called upon to connect up unlisted water heaters. This calls for special precautions. The first, clearance, is indicated in paragraph 7 (c), just ahead of table 2, in which a clearance of 12 in. is recommended. While this may be criticized as a severe requirement, the fact remains that the AGA does not have authenticated test data on the unlisted heaters, so they have specified a figure which should be safe with the worst possible heater construction. In case there should ever be a fire in the customer's house, violation of this provision might make it difficult to secure proper insurance adjustment.

The second precaution necessary with unlisted heaters is to determine that the burner valve is equipped with the correct size orifice for L. P. gas. If it has an adjustable orifice, this should be discarded, and replaced with a fixed orifice of the correct size for the input of the burner.

Along with the above, we should consider again the following paragraphs from section 4 of LPGA Pamphlet No. 1:

"(b) Any appliance that was originally manufactured for operation



The circulating tank, or "side arm" water heater requires more space and greater clearances than the automatic storage type. Costs less, but lacks convenience.

LPGA Recommended Good Practice Rules for Liquefied Petroleum Gas Piping and Appliance Installations in Buildings.

7. Water Heaters

(a) Water heaters shall not be installed in bathrooms or bedrooms, unless vented in compliance with section 27 of these rules.

(b) Water heaters shall be located as close as practicable to the flue or vent. They should be located so as to provide short runs of piping to fixtures.

(c) Listed gas-fired water heaters shall be positioned in relation to combustible construction with a minimum clearance in accordance with Table 2. In no case shall the clearances be such as to interfere with the requirements for combustion air and accessibility. See 5 (a) and 5 (c). Unlisted water heaters shall be installed with a clearance of 12 inches on all sides and rear. Combustible floors under unlisted water heaters shall be protected in an approved manner.

TABLE 2

MINIMUM CLEARANCES FOR LISTED GAS-FIRED WATER HEATERS

Type of Heater**	Distance from Combustible Construction, Inches: Nearest Part of Jacket	Flat Side
Type A	6	——
Type B	2	——
Type C	—	Flush

**Type A—Miscellaneous (including circulating tank, instantaneous uninsulated, underfired).

Type B—Underfired, insulated automatic storage heaters.

Type C—Type B units with one or more flat sides, and tested for installation flush to wall.

(d) Water heaters shall be installed in a manner to permit observation, maintenance, and servicing.

(e) No water heater shall be installed on a closed system of water piping unless an approved water pressure relief valve is provided.

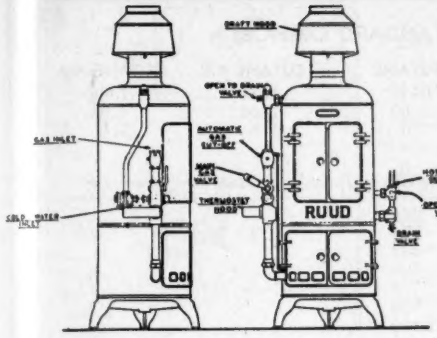
(f) The installation and adjustment of temperature, pressure, and vacuum relief valves or combinations thereof, and automatic gas shut-off valves shall be in accordance with the requirements of the proper administrative authority, or with the manufacturer's instructions covering such devices.

(g) The water supply to any automatic instantaneous water heater shall be such as to provide sufficient pressure to properly operate the water valve, when drawing water from a faucet on the top floor.

(h) The method of connecting the circulating water heater to the tank shall assure proper circulation of water through the heater, and permit a safe and useful temperature of water to be drawn from the tank. See Figure 2.

(i) The size of the water circulating piping, in general, shall conform with the size of the water connections of the heater.

(Continued on next page)

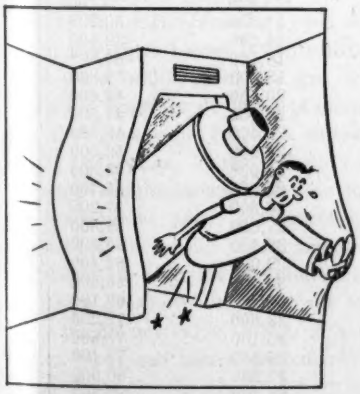


The automatic instantaneous water heater burns more fuel, and requires greater clearances than the automatic storage type, but supplies large quantities of hot water continuously.

with a gaseous fuel other than L. P. gas, and is in good condition, may be used with L. P. gas only after it has been properly converted, adapted, and tested for performance with L. P. gas before the appliance is placed in use.

"(c) Any automatically controlled domestic appliance except ranges shall be equipped with an automatic pilot, complete shut-off type. . . . Manually controlled water heaters shall be so equipped also."

In the *listed* water heaters approved for use with L. P. gas, these precautions are taken care of in advance. They are among the requirements for listing. But in installing water heaters that have no AGA listing, or those which are listed for use on natural or manufactured gas, or which have been used with either of those fuels, particular attention should be paid to these points. No burner is going to operate properly unless it has the correct size orifice, and no burner is safe if it spills out a residue of unburned fuel or carbon monoxide.



In installing larger heaters in enclosures, proper clearances must be maintained.

A good many water heaters listed for use with natural or manufactured gas come from the factory without the complete shut-off type automatic pilots required with L. P. gas. This is not on account of discrimination, as has frequently been charged. Natural and manufactured gas are lighter than air. If the pilot should go out in a water heater operating on either of these fuels, the gas might escape through the open main valve, but it would travel up the vent, and be discharged at the top and be dissipated to atmosphere without creating a hazard. L. P. gas is heavier than air, so failure of the pilot under a water heater not equipped with a complete shut-off type automatic pilot would cause the escape of gas into the room in which the heater is located—a highly dangerous condition.

The requirement for pressure relief valves in water systems having "closed piping" is of particular significance to L. P. gas operators. This refers to systems in which excess pressure cannot be relieved by backing up into the mains, or into an open tank or reservoir supplying water by gravity. A great many country homes have their own water supply provided by an "automatic pressure water system." These systems are completely closed. They get their pressure by forcing water into a closed tank, against the pressure of the entrapped air. As the pressure is reduced by drawing water through the various piped outlets, the water level and pressure are restored by the pump, under control of switches operated by a pressure valve set to turn the pump off at a predetermined high limit, and start it again when the pressure drops to a suitable low limit.

Failure of the water pump switch to turn off when it should, or failure

Good Practice Rules (LPGA Pamphlet No. 1)

(j) A suitable water valve or cock, through which sediment may be drawn off or the tank emptied, shall be installed at the bottom of the tank.

(k) Means acceptable to the proper administrative authority shall be provided to prevent syphoning in any boiler or tank to which any circulating water heater is attached. A cold water tube with a hole near the top is commonly accepted for this purpose. See Figure 2.

16. Clothes Dryers

(a) Listed clothes dryers shall be installed with minimum clearances of 6 inches from adjacent combustible construction, except that clothes dryers listed for installation at lesser clearances may be installed in accordance with their listings. A minimum clearance of 16 inches shall be provided between the top of the flue and the lower surface of any combustible material located above the dryer. Unlisted clothes dryers shall be installed with clearances to combustible construction of not less than 18 inches. Combustible floors under unlisted clothes dryers shall be protected in an approved manner.

(b) Gas fired clothes dryers installed for multiple family use shall be equipped with approved automatic pilots.

17. Gas Fired Incinerators

(a) Gas fired incinerators shall be installed as close as practicable to a chimney, and with at least 12 inches clearance between sides and combustible construction, except that appliances listed for installation at lesser clearances may be installed in accordance with their listing. In no case shall the clearance be such as to interfere with the requirements for combustion air and accessibility. See 5 (a) and 5 (c). Incinerators of the wall type shall be installed in a non-combustible wall connecting directly with a chimney flue. Unlisted incinerators shall be installed with clearances to combustible construction of not less than 18 inches, and shall not be installed on combustible floors unless the floor under the appliance is protected in an approved manner.

(b) No draft hood shall be connected into the smoke pipe of an incinerator. Where conditions permit, it is preferable to have the smoke pipe connected with a separate chimney flue. See 27 (g).

(c) Smoke pipes shall have at least 18 inches clearance from combustible construction, and shall not pass through combustible construction unless guarded at the point of passage, as specified in 26 (h) 1, which reads as follows:

"Flue and vent connectors other than Type B, shall not pass through any combustible walls or partitions unless they are guarded at the point of passage by ventilated metal thimbles not smaller than the following:

1. For listed appliances, except floor furnaces and incinerators—4 inches larger in diameter than the flue or vent connector, unless there is a run of not less than 6 feet of flue or vent connector in the open, between the draft hood outlet and the thimble, in which case the thimble may be 2

(Continued on page 79)

TABLE NO. 1. FLOW OF LP-GAS THROUGH STANDARD ORIFICES

	PROPANE	BUTANE	BUTANE-AIR	BUTANE-AIR
Heating Value B.t.u. per cu. ft.	2500	3175	525	1000
Specific Gravity (Air 1.0)	1.53	2.00	1.16	1.31
Pressure Inch Water Column	11.0	11.0	5.0	7.0

Drill Size	*Diameter Inches*	*Orifice Area Sq. In.*	*Flow of Gas in B.t.u.'s per Hour*			
..	0.006	.000028	249	276	.....	.....
..	0.007	.000038	338	374	.....	.....
..	0.008	.000050	445	492	.....	.....
..	0.009	.000064	570	630	.....	.....
..	0.010	.000079	703	778	.....	.....
..	0.011	.000095	845	936	.....	.....
..	0.012	.000113	1,005	1,110	.....	.....
80	0.0135	.000143	1,270	1,410	204	438
79	0.0145	.000165	1,470	1,625	236	505
78	0.0160	.000201	1,790	1,980	287	816
77	0.0180	.000254	2,260	2,500	363	778
76	0.0200	.000314	2,790	3,090	448	962
75	0.0210	.000346	3,080	3,410	494	1,060
74	0.0225	.000398	3,540	3,920	567	1,225
73	0.0240	.000452	4,020	4,450	645	1,390
72	0.0250	.000491	4,370	4,840	700	1,510
71	0.0260	.000531	4,730	5,240	757	1,630
70	0.0280	.000616	5,490	6,070	878	1,890
69	0.0292	.000670	5,960	6,600	955	2,060
68	0.0310	.000755	6,720	7,440	1,078	2,320
67	0.0320	.000804	7,150	7,920	1,147	2,470
66	0.0330	.000855	7,600	8,420	1,219	2,620
65	0.0350	.000962	8,560	9,480	1,370	2,950
64	0.0360	.001018	9,050	10,030	1,450	3,120
63	0.0370	.001075	9,570	10,600	1,535	3,290
62	0.0380	.001134	10,100	11,140	1,620	3,470
61	0.0390	.001195	10,600	11,800	1,705	3,660
60	0.0400	.001257	11,170	12,300	1,759	3,850
59	0.0410	.001320	11,750	13,000	1,885	4,040
58	0.0420	.001385	12,300	13,600	1,980	4,240
57	0.0430	.001452	12,930	14,300	2,075	4,450
56	0.0465	.001698	15,100	16,700	2,425	5,200
55	0.0520	.002120	18,850	20,900	3,030	6,490
54	0.0550	.002380	21,200	23,400	3,400	7,280
53	0.0595	.002780	24,700	27,400	3,970	8,520
52	0.0635	.003170	28,200	31,200	4,530	9,700
51	0.0670	.003530	31,400	35,000	5,060	10,800
50	0.0700	.003850	34,200	38,000	5,490	11,800
49	0.0730	.004190	37,200	40,300	5,980	12,850
48	0.0760	.004540	40,400	44,700	6,480	13,950
47	0.0785	.004840	43,000	47,600	6,910	14,900
46	0.0810	.005150	45,800	50,700	7,350	15,800
45	0.0820	.005280	47,000	52,000	7,550	16,200
44	0.0860	.005800	51,600	57,200	8,280	17,800
43	0.0890	.006220	55,300	61,300	8,870	19,100
42	0.0935	.006870	61,100	67,700	9,800	21,100
41	0.0960	.007240	64,400	71,300	10,300	22,200
40	0.0980	.007540	67,000	74,200	10,750	23,100
39	0.0995	.007780	69,200	76,600	11,120	23,900
38	0.1015	.008090	72,000	79,600	11,520	24,800
37	0.1040	.008490	75,500	83,600	12,100	26,000
36	0.1065	.008910	79,300	87,800	12,700	27,300
35	0.1100	.009500	84,500	93,600	13,550	29,100
34	0.1110	.009680	86,200	95,300	13,820	29,700
33	0.1130	.010030	98,300	99,500	14,350	30,800
32	0.1160	.010570	94,000	104,000	14,680	32,400
31	0.0200	.011310	100,600	111,500	16,100	34,600
30	0.1285	.012960	115,300	127,600	18,500	39,800
29	0.1360	.014530	129,500	145,200	20,550	44,600
28	0.0405	.015490	137,500	152,500	22,100	47,500
27	0.1440	.016290	145,000	160,500	23,400	49,900
26	0.0470	.016970	151,000	167,000	24,200	52,000
25	0.1495	.017550	156,000	173,000	25,050	53,800
24	0.1520	.018150	161,500	179,200	25,900	55,700
23	0.1540	.018630	166,000	183,500	26,600	57,200
22	0.1570	.019360	172,000	190,700	27,650	59,300
21	0.1590	.019860	176,500	195,700	28,350	60,900
20	0.1610	.020360	181,100	200,000	29,000	62,400
19	0.1660	.021640	193,000	215,000	30,900	66,500
18	0.1695	.02256	200,500	222,000	32,200	69,100
17	0.1730	.02351	209,000	231,500	33,600	72,200
16	0.1770	.02461	219,000	242,500	35,100	75,600
15	0.1800	.02545	236,500	250,500	36,300	78,100
14	0.1820	.02602	242,000	256,500	37,200	80,000
13	0.1850	.02688	239,500	264,500	38,400	82,500
12	0.1890	.02806	250,000	275,000	40,100	86,200
11	0.1910	.02865	255,000	282,000	40,900	88,000
10	0.1935	.02940	261,500	289,500	42,000	90,200

The instantaneous water heater becomes a steam boiler if the water pressure gets too low to close the gas control valve.

of the water heater thermostat to turn off the burner when proper storage temperature has been reached, would cause over-pressuring of the system. This might or might not reach a dangerous limit. More serious is what might happen in case a small leak developed in the top of the water pressure tank, allowing the air to escape and the tank to become completely filled with water. Unless the pressure relief valve is installed in the water system, the normal operation of the water heater might cause expansion beyond the safe limit of the system, and something would burst.

Paragraph (f) brings up a matter of considerable importance—local codes differ a great deal in regard to the installation of safety devices in plumbing and gas systems. The codes applying to both plumbing and gas systems in your own community should be obtained, and the portions applying to pressure and vacuum relief valves should be studied in connection with this assignment.

Since the instantaneous type of automatic water heater is controlled by a valve which turns the gas on when the pressure drops, it is obvious that paragraph (g) is a sound safety precaution. If the upstairs pressure should become too low to close the valve when the faucet is turned off, the burner would remain in operation until the development of steam pressure was sufficient to close the burner valve, Steam in hot water pipes can cause serious personal injury.

Paragraphs (h), (i), (j) and (k) are matters which refer primarily to making installations function correctly, so as to insure customer satisfaction.

The practices recommended in LPGA Pamphlet No. 1 covering installation of Gas Fired Clothes Dryers (Section 16) are brief, and are limited mainly to the clearances which must be maintained between the dryer and combustible construction, and between the flue and any combustible material which may be above it.

The requirements are quite similar to those of listed heating appliances, which were the subject of one of the previous assignments. It is worthy of note that the unlisted clothes dryers are placed under a severe handicap in requiring not less than 18 inches of clearance to combustible construction, besides special protective measures when installed on combustible floors. With the AGA approved dryers, we are sure of their safety when installed at a minimum clearance of 6 inches, or even closer if so specified on the AGA approval label, and no special precautions need be taken about mounting on wooden or other combustible floors. The listed clothes dryers are equipped with built-in heat stopping devices, so they may be installed close to the wall and on any kind of floor. Since these units are bulky, and take up considerable space, it is quite important that the brands of known safe construction as indicated by AGA listing, be used when making installations where space is a problem.

Paragraph 16 (b) sounds a sensible precaution in requiring gas fired clothes dryers installed for multiple family use (as in apartment houses and serve-yourself laundries) to be equipped with automatic pilots.

By the way, what is an automatic pilot? Let's not be fooled on that one—it is not just a pilot that automatically lights the burner when the gas valve is turned on.

In Appendix A of LPGA Pamphlet No. 1, we find the following definition of "Automatic Pilot": "Consists of an automatic pilot device and pilot burner securely assembled in fixed relationship."

An "Automatic Pilot Device" is "A device employed with gas burning equipment which will automatically shut off the gas supply to the burner being served, by either direct or indirect means, when the pilot flame is extinguished. The pilot burner may

Good Practice Rules (LPGA Pamphlet No. 1)

inches larger in diameter than the flue or vent connector."

(d) The smoke pipe from an incinerator to a Type A flue or vent shall be galvanized steel of a thickness at least No. 24 U. S. Standard Gauge, or of material having equivalent or superior heat and corrosion resistant properties, and the joints shall be secured by sheet metal screws.

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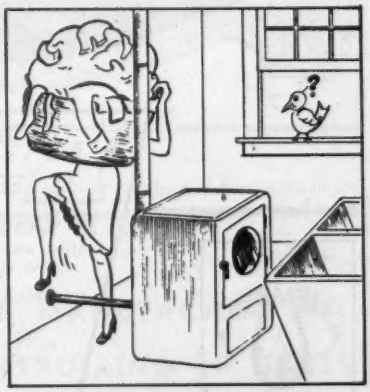
or may not be constructed integrally with the device."

There we have it. We should not incur the hazard of escaping gas in any installations where uninformed people might turn on the main gas valve and fail to note whether or not the burner is lit. Presumably the housewife turning on her own gas clothes dryer would note the failure of the burner to light, just as she did years ago with the pilot that lit her oven and offered no additional safety protection. The gas clothes dryer has a big burner, and could create a hazard very quickly unless the gas coming out of the cock is burned immediately. People who can pay the price at which these units are sold can pay for complete safety. The dryer may come equipped with the automatic pilot, or it may be added at the time of installation. Let's get this done—it's safer that way.

Gas Fired Incinerators need to be installed with consideration for the heat of the gas burner, and also the extra heat produced by any combustible material which may be burned. The Recommended Good Practices of LPGA call for minimum clearance of



Listed clothes dryers may be installed 6 in. from the wall. The "book of rules" calls for 18 in. with unlisted dryers.

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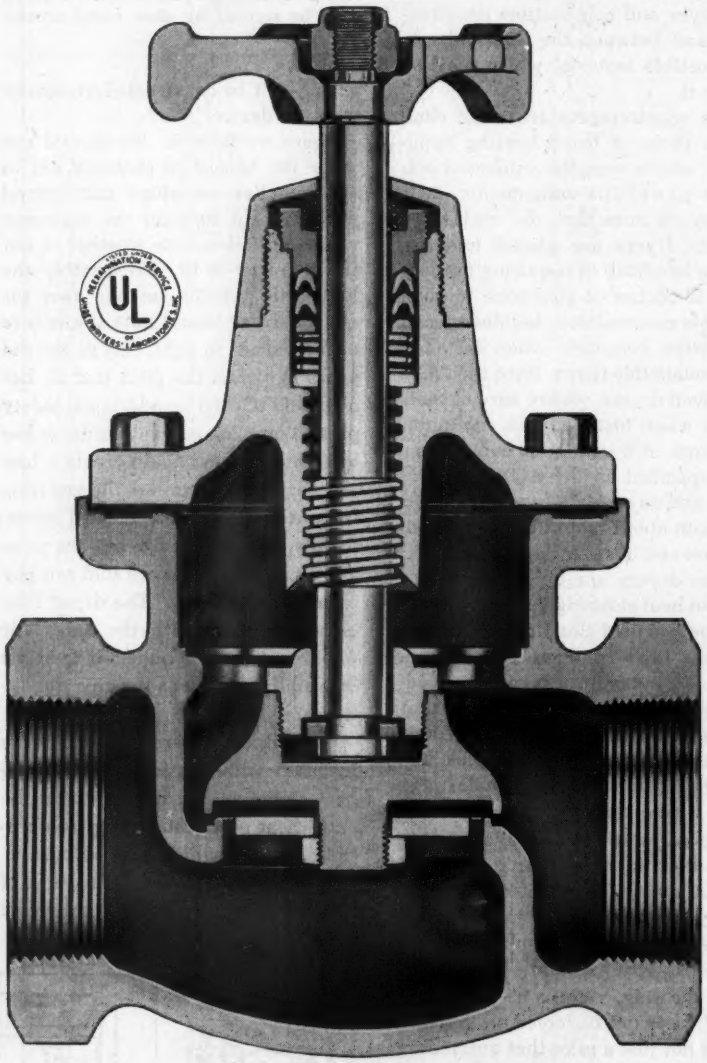

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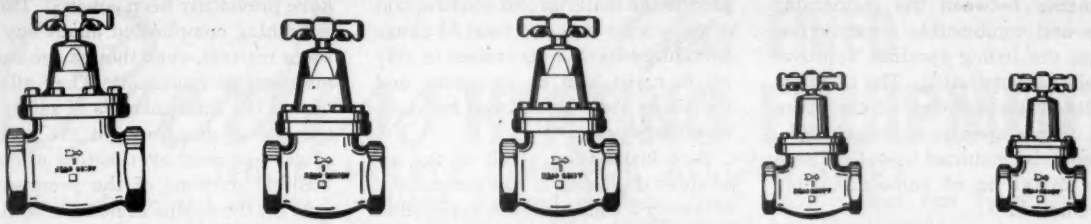

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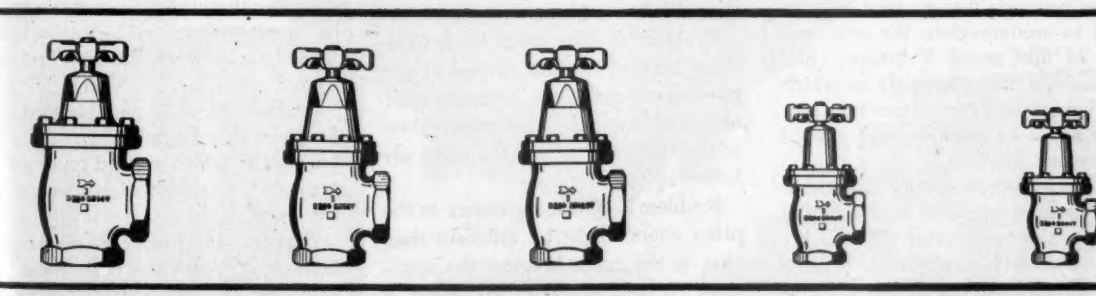

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PIONEER AND LEADER IN THE DESIGN AND MANUFACTURE OF PRECISION EQUIPMENT FOR USING AND CONTROLLING LP GASES

12 inches between the incinerator sides and combustible construction, unless the listing specifies approval for closer installation. The above is for listed incinerators of the room type. There are also incinerators designed to be mounted in walls. These walls must be of non-combustible construction.

On account of the unpredictable temperatures which may be developed in these appliances when in operation, connection to a substantial chimney is essential. "Chimney" is defined in LPGA Pamphlet No. 1 as "A vertical masonry or concrete shaft containing one or more flues or vents." Obviously, with the emphasis placed on "chimney," this is the only type of venting considered safe. Table 5, in Section 26, devoted to flue and vent connectors, notes that Type B flues or vents are not permitted with incinerators. The preference expressed for connection of the smoke pipe from the incinerator to a separate chimney flue is emphasized as a good practice, with reference to paragraph 27 (g), which reads:

"In order to promote better draft where more than one gas appliance flue or vent connector is connected to a flue or vent, the connections should be made at different levels. Two or more gas appliances may be vented through a common flue or vent connector where necessary, if joined by Y fittings as close as practical to the flue or vent, and provided the size of the common flue or vent is sufficient to accommodate the total volume of flue gases. Y fittings shall be made so that the angle at which the flue or vent connectors intersect is as small as possible, and should not exceed 45°."

The regulations specify that there shall be no draft hood in the smoke pipe for the incinerator. This is because it would be undesirable to have a backdraft push the smoke of burning rubbish back into a basement or other part of the house. This adds emphasis to the precaution mentioned above—that the incinerator should be connected to a separate flue if possible. Other appliances are equipped with draft hoods, and it would be equally undesirable to have the smoke from the incinerator blown into a room in the living quarters of the house.

The regulations for venting incinerators are also very specific in regard to the material and construction of the smoke pipe—at least 24 gauge galvanized steel or equivalent in ability to resist heat or corrosion, and the joints shall be secured by sheet metal screws.

Safe installation of all of the appliances discussed in this assignment is merely a commonsense application of the principles learned in connection with other appliances which have previously been covered. There is nothing complicated about any of these matters, even though the rules may appear numerous. They all relate to the fundamentals of safety in the use of gas—prevent the escape of gas—prevent overheating of combustible portions of the premises—prevent the escape of noxious or hazardous flue gases into occupied quarters.

Answers to Problems on Page 74 of the August Issue

Problem 1. The hazards avoided by venting appliances are carbon monoxide, carbon dioxide, and irritating fumes caused by incomplete combustion.

Problem 2. You will have to find the answer to this question in your local code.

Problem 3. In nearly all jurisdictions venting is not required for ranges, small room heaters and gas clothes dryers. This might not be the case in your community. Please check the code.

Problem 4. Any room in which any heater or other gas appliance is burning should be well ventilated.

Problem 5. The draft hood is designed to prevent downdrafts from blowing out the burner fire or the pilot, and provides a means of escape for the burned gases in case the flue should become plugged.

Problem 6. The draft hood functions best where the stream of gas moving through it is going at highest possible speed. This is down close to the appliance, where the gases are hottest.

Problem 7. The air pressure in the other room might be different than that in the room housing the appliance. If higher, it might cause a downdraft back to the appliance, interfering with combustion. If lower, it might draw the flue gases out into the room instead of passing them on to the outside atmosphere.

Problem 8. Type A is a masonry or concrete chimney or equivalent. Type B is of metal or composition material having insulating value due to either design or material. Type C is single thickness corrosion resistant metal.

Problem 9. Type A flue should be used in any installation in which the flue gas temperature might exceed 550° F.

Problem 10. The advantages of Type C flue are low cost and ease of workability. The disadvantages are that under most codes it can only be used in a limited number of areas. Also, it is not suitable for the construction of long vents because its lack of insulating value permits too much cooling of the flue gases, which interferes with efficient venting.

Problem 11. Listed appliances, with the exceptions noted in the question, are designed so the flue gases at the flue collar are below 550° F.

Problem 12. We cannot be sure that the design of the appliance and the burner are such that the temperature is in any particular range.

Problem 13. A ventilated thimble is a metal spacer designed to center a vent pipe in a hole through a partition or wall. The hole has a larger diameter than the pipe, and the thimble is cut out to provide free circulation of air between the vent and the wall.

Problem 14. It is possible that the fireplace flue might be subject to backdrafts which could carry the products of combustion back into the room.

Problem 15. Either remove the damper and seal the pivit holes, or wire the damper control firmly in place in the open position.

Problem 16. You should report the condition to your superior, or be guided by his previously expressed policy in such cases. We think that someone in your organization should discuss the situation with the customer, and make the effort to get the improper conditions corrected. Regardless of what we think, you are naturally to be guided by your company's policy.

Problems For Discussion At Ninth Safety Meeting

This is the final assignment on installation of domestic appliances. The subject is relatively simple, presenting few new problems beyond those which have been encountered in the study and discussion of other appliances and the basic gas installation.

We believe the first six problems below cover the subject in the specific details in which installation of water heaters, clothes dryers, and incinerators differ from other appliances.

The other problems are submitted as a sort of review to help you remember the various principles involved, and give you practice in working out the combinations to find the answers. We have tried to keep these questions strictly on the safety angle, leaving out anything that might be subject to more than one answer due to differences in local laws.

Our answers will be published in the October issue, along with the safety meeting program based on this assignment. We suggest that you work out your own answers first, and compare them with the published answers later.

Problem 1.

A customer in a new housing project finds that her 30 gal. water heater is too small to meet the needs of her family. Installing a 40 gal. heater would provide enough hot water, but the centrally located enclosure for the heater barely provides the clearances required for the present heater. What can you do to provide more hot water, and stay within the law?

Problem 2.

Suppose that in the above case the lady's husband, who considers himself something of an engineer, proposes to solve the problem himself by installing a larger orifice in the present burner, or installing a larger burner. What possible hazards might these changes produce?

Problem 3.

One of your customers buys an unlisted water heater at a bargain, and asks you to install it. The label tells you that the heater is "suitable for any kind of gas". Outline every step you would take to be sure the installation is safe and legal.

Problem 4.

You serve gas to a union high school located on a hill above a village. To protect the water heaters and other plumbing against running dry due to withdrawal from down the hill in the event that the water supply fails, a check valve has been installed in the service line connecting with the main. The following Friday night, following a basketball game and extensive use of the showers, the big storage heater burst. What was the cause of this accident, and what should have been done to prevent it?

Problem 5.

Why are the clearances specified for the installation of gas-fired water heaters twice as great as those permitted for most other types of gas appliances, when the burners in the incinerators are relatively small?

Problem 6.

Draft hoods are required on nearly all vented appliances, but the regulations specifically prohibit the use of draft hoods on domestic incinerators. Why this difference? Might there be some health hazard involved in case a back-draft should fill a basement with fumes from an incinerator which had been equipped with a draft hood by error?

QUESTIONS FOR REVIEW

Problem 1.

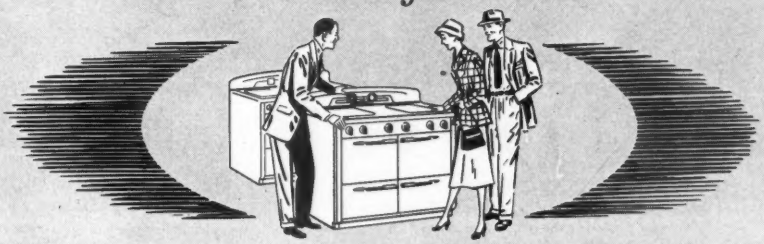
Out where "butane" was first used, there are still a good many butane tanks in service—working pressure, 100 psi.; pressure relief valve setting, 125 psi. A new driver serving a route caught an "out of gas" call from a customer having one of the old tanks. The butane tank on the truck was empty, but he still had propane. He wouldn't dream of *filling* the butane tank with propane—so he just put in a few gallons to last over until he could come by with a load of butane and fill the tank. The next afternoon was hot, and the customer's house burned down, apparently as the result of escaping gas. Explain how the gas escaped.

Problem 2.

A man living in a house trailer equipped with a single 20 lb. cylinder ran out of gas while cooking dinner. Discovering that the fire had gone out, he had the cylinder refilled, reconnected it, opened the valve, and went over to the wash house to clean up. Re-entering the trailer, he struck a match to light the burner. The trailer walls blew out and the roof came down on his head. What simple precaution that would have prevented this accident had he forgotten? Because people forget to keep themselves safe, we have mechanical devices to provide automatic precautions. Name two devices which could have been used in this case to provide elements of safety.

INSTALLMENT SELLING

Is the Backbone of Your Business



LPG CREDIT CORPORATION

. . . offers the only complete financing plans designed especially to fit today's needs of the LP-Gas Industry

1—*Retail Installment Financing* of sales to new customers. In one "package" the LPG Credit Corporation finances the appliances, the lease fee (when containers and systems are leased) or the sale price of the complete installation (when equipment is sold outright) and the initial sale of gas.

Today's retail selling practices require an "installment" program. National surveys prove that more than 80 per cent of all home appliances are sold on monthly payment terms. Our complete, low cost financing service has helped hundreds of dealers improve their sales volume . . . our specially designed plans can help you.

Value Plus. As part of its services, LPG Credit Corporation offers a merchandising policy and a complete advertising and sales promotion program as effective sales tools, including showroom display material, newspaper ad mats, radio spot announcements, and direct mail booklets.

Our Financing Plans also cover three other basic problems

2—*Floor Plan* for financing inventories of gas appliances and containers for resale.

3—*Financing of Cylinders and Tanks* leased to retail customers.

4—*Financing of Bulk Storage Tanks, Tank Trucks, and Transports.*

LPG *Inquiry on your company letterhead is invited*

LPG CREDIT CORPORATION

312 EAST 131ST STREET • CLEVELAND 8, OHIO

ASSOCIATION NEWS

Kentucky

Attendance climbed past the 500 mark at the July 26-28 annual convention of the Kentucky LPGA held at the Seelbach Hotel in Louisville, where guests were told that bottled gas sales were up 7% over 1951 by Mel Trotter, national LPGA president.

Other speakers at Kentucky's sixth annual convention included S. F. Wikstrom, New York AGA representative, and Jack N. Krueger, University of Kentucky agricultural research engineer.

Elected to head the association was Charles Shaffer, Nicholasville, named president and director; E. J. Lee, Ashland, vice president; Thomas B. Crutcher, Louisville, director; Robert B. Green, Ft. Thomas, director; Elmer Roll, Hazard, and George W. Slate, Munfordville, directors.

Long Island

Long Island L. P. Gas Association voted unanimously to integrate with LPGA at a recent meeting. The group, headed by Walter Peterson, Bamman's Gas Service, Bay Shore, also became District 12 of the New York L. P. Gas Association.

New York

The New York State LPGA held its annual summer meeting at the Syracuse Yacht Club, Syracuse, August 5, with president Marcy Coyle presiding.

The business session featured a film on "Fire Fighting of L. P. gas" which was presented by Omar J. Lane, Ansul Chemical Co.; a slide talk entitled "It's Your Move" by George J. Schulte, Jr., National LPGA; and a talk on "The Increased Use of Fertilizer" by A. E. Bone, president of Eastern Propane Co., Malvern, Pa.

Golfing, swimming and boating were recreational activities of the late afternoon, and the meeting was climaxed by a clam bake with entertainment by the Blumkin German Band.

North Dakota

Neiman H. Behm, Minot, was re-elected president of the North Dakota LPGA at the association's recent annual convention. L. L. Stone, Bismarck, was chosen vice president and Kenneth Backlund, Minot, was named as secretary-treasurer.

Re-elected to the board of directors were Grouer Boutin, Carrington; E. S. Jelsing, Fargo, and Art Morken, Williston. Clifford Olson, Larimore, was named as a new director.

South Dakota

New officers of the South Dakota LPGA elected at the recent annual meeting at Rapid City were: Greg Schladweiler, president, Parkston; Henry Allison, vice president, Winner, and Tom Larson, secretary-treasurer, Rapid City.

Named to the board of directors were Martin Steinlicht, Mobridge, and Bill Riley, Rapid City.

Tennessee

A registration of 200 was reported for the Tennessee LPGA annual convention July 19-21 at the Andrew Jackson hotel, Nashville.

A roster of distinguished speakers included Frank G. Clement, governor of Tennessee, Hon. Clifford S. Randy, Milwaukee, and M. A. Ennis, director of the National Committee for LP-Gas Promotion. A prominent portion of the program was an address, "Life and Death on Devil's Island", by Captain Rene Buche, Commandant, French Constabulary.

Recreational features of the convention included movie and bridge parties and a style show for attending wives, a golf tournament for the men, with a banquet as the concluding event.

Newly elected officers of the Association are: E. C. Ansley, Winchester, president; L. A. Varnadow, Athens, vice president, and Joseph Graham, Columbia, secretary-treasurer.

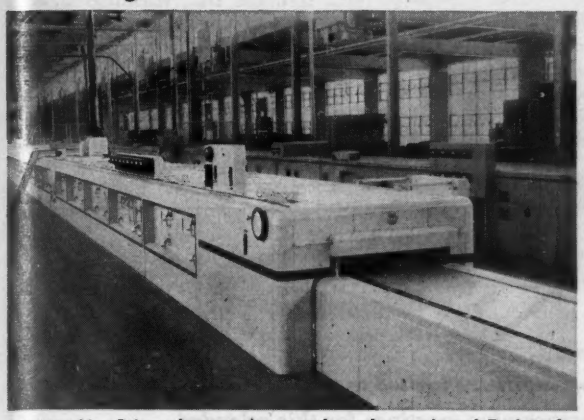
James L. Potter Named Vice President of LGDA

James L. Potter

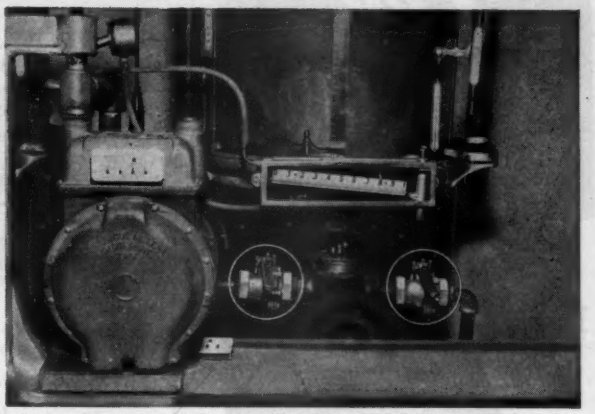
James L. Potter, Santa Barbara, was recently appointed executive vice president of the Liquid Gas Dealers Association of California, according to an announcement released by George W. Requa, executive secretary. Mr. Potter's appointment was made during a board of directors meeting held in Fresno, Calif.

At the same time C. R. Usher, American Liquid Gas Co., Los Angeles, was named director for district 13, which comprises Los Angeles county.

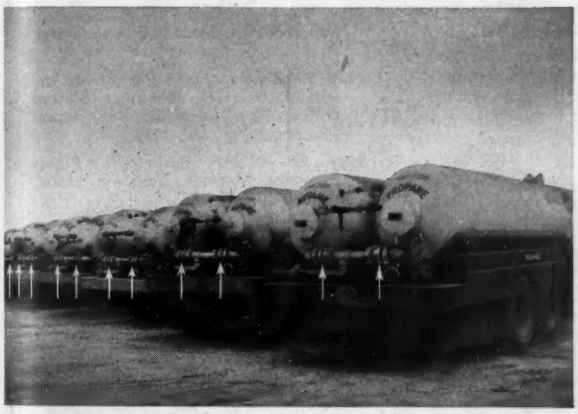
Do you need a LEAKPROOF VALVE?



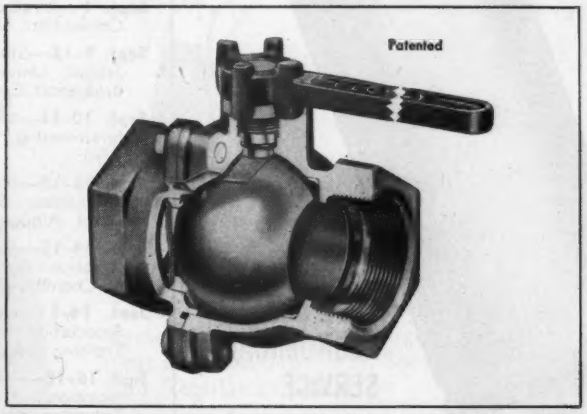
Leakproof in a Bakery where escaping gas and gas odor are a hazard. Rockwood Ball Valves, used in the ovens above, hold tight despite adjustment at various times to control flow of natural gas.



Leakproof on Air Lines Testing Gas Meters. Rockwood Ball Valves, used on air lines above, are opened and closed 1000 times a day, have completed two years' service without leakage, without maintenance.



Leakproof on LP Gas Trucks where flammable bottled gas must not escape. Rockwood Ball Valves, used on trucks above, prove not only leakproof but longer wearing at less cost. Fleet operator praises them.



Leakproof for a Longer Time. Rockwood Ball Valves are designed to operate under the roughest and most grueling of conditions. They pay for themselves over and over wherever they are in service.

Note these other exclusive features!

Full Round Flow — assuring fast, efficient operation, less friction loss.

Quick Opening and Closing — needs only ¼ turn even under full pressure.

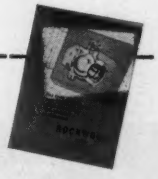
Resists Wear Longer — Chrome-plated bronze ball stands up under abrasion, pitting and scratching.

Rockwood Ball Valves are used in all types of applications throughout the petroleum field. Perform with trouble-free continuity. Longer time between replacements, less maintenance on the job. Comes in all pipe sizes. Tested and listed by Underwriters' Laboratories, Inc. The coupon will bring you complete information.

ROCKWOOD

THE FLOW IS AS ROUND AS THE PIPE ITSELF

***FULL-FLOW* BALL VALVES**



ROCKWOOD
SPRINKLER COMPANY
82 Harlow Street, Worcester 5, Mass.

Send me illustrated folder V-4 on Rockwood Full-Flow Ball Valves.

Name.....

Title.....

Company.....

City.....

Zone.....State.....

More Chairmen Named For National LPGA

Recent appointment of four more chairmen by President M. L. Trotter rounds out the setup of Liquefied Petroleum Gas Association committee leaders for the 1953-4 year. Mr. Trotter renamed Fred H. Greenwood, Greenwood & Co., Gainesville, Tex., chairman of the Insurance Committee. He appointed Walter A. Schuette, Hausgas, Inc., Washington, Mo., chairman of the Educational Committee; Harry R. Thomas, Stanolind Oil & Gas Co., Tulsa, Okla., chairman of the Legislative Committee, and Don McNary, Calor Gas Co., San Francisco, Calif., chairman of the L. P. Gas Specifications Committee.

CALENDAR

All associations are invited to send in dates of their forthcoming meetings for this calendar.

SEPTEMBER

Sept. 1—Alabama LPGA. Annual Convention. Montgomery.

Sept. 9-12—5th Eastern LPG Service School. University of Bridgeport, Bridgeport, Conn.

Sept. 10-11—LPGA Board of Directors meeting. Valley Ranch, Valley, Wyo.

Sept. 13-15—New Mexico L. P. Gas Association. State meeting. Hilton Hotel, Albuquerque.

Sept. 14-15—Virginia L. P. Gas Association. Annual Convention. Hotel Chamberlain, Old Point Comfort.

Sept. 14-17—Texas Butane Dealers Association Management Institute Training Program. Lubbock.

Sept. 16-18—National Petroleum Association. Annual meeting. The Traymore, Atlantic City, N. J.

Sept. 18-19—Joint meeting of North Carolina L. P. Gas Association and South Carolina L. P. Gas Association. Hotel Frances Marion, Charleston, S. C.

Sept. 21-22—Iowa L. P. Gas Association. Fall Meeting, Savery Hotel, Des Moines.

Sept. 22—Pennsylvania L. P. Gas Association. Annual meeting. Penn Harris Hotel, Harrisburg.

Sept. 26-27—Wisconsin LPGA. Fall meeting. Northernaire Hotel & Spa, Three Lakes.

OCTOBER

Oct. 1-2—Illinois IPGA, Annual convention. St. Nicholas Hotel, Springfield.

Oct. 11-17—Oil Progress Week.

Oct. 19-23—41st National Safety Congress and Exposition, Conrad Hilton, Congress, Morrison and Hamilton Hotels, Chicago.

Oct. 21—LPGA East Central District. Operating conference. Hotel New Yorker, New York City.

Oct. 23—NGAA Southern Regional Meeting, Blackstone Hotel, Tyler, Tex.

NOVEMBER

Nov. 9—Mississippi LPGA. Annual Fall meeting. Robert E. Lee Hotel, Jackson.

Nov. 9-12—American Petroleum Institute. Annual meeting. Conrad Hilton Hotel and Palmer House, Chicago.

Nov. 20—NGAA Panhandle - Plains Regional Meeting, Herring Hotel, Amarillo, Tex.

1954

JANUARY

Jan. 5-26—Michigan LPGA winter meeting, Pantlind Hotel, Grand Rapids.

FEBRUARY

Feb. 26—NGAA Permian Basin Regional Meeting, Lincoln Hotel, Odessa, Tex.

MARCH

Mar. 22-24—LPGA Southeastern District. Annual convention. Atlanta-Biltmore Hotel, Atlanta, Ga.

APRIL

April 5-7—Nebraska Liquefied Petroleum Gas Dealers Association. Annual convention and trade show. Fontenelle Hotel, Omaha.

April 21-23—NGAA 33rd Annual Convention, Baker Hotel, Dallas, Tex.

April 24—Liquid Gas Dealers Association of California. Annual Meeting, Palace Hotel, San Francisco.

April 25-27—Missippi LPGA. Annual Convention. Edgewater Gulf Hotel, Edgewater Park.

MAY

May 9-12—LPGA annual convention and trade show. Conrad Hilton hotel, Chicago.

May 19-21—Gas Appliance Manufacturers Association. Annual meeting. Drake Hotel, Chicago.

YOUR BEST BET!

..for metered service..

LP-Gas distributors with metered service systems have learned through experience that they can depend on Sprague Meters and Regulators.

For trouble free service with the accuracy both you and your customer want your best bet is — to specify Sprague when you order.

Designed to meet exacting weather conditions, engineered for minimum wear at salient points — Sprague Meters and Regulators are a good investment in the future for you.

SPRAGUE ZEPHYR illustrated.

Inquire about the entire line of Sprague Meters and Regulators for LP-Gas.

THE SPRAGUE METER COMPANY

BRIDGEPORT, CONNECTICUT

DAVENPORT, IOWA • HOUSTON, TEXAS • LOS ANGELES & SAN FRANCISCO, CAL.

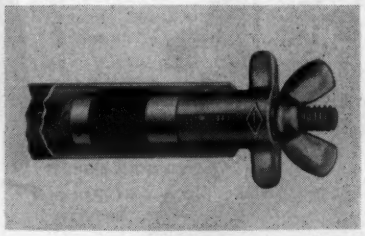
Products and Trade Publications

To secure further information on products or new publications, fill out the coupon and mail, indicating by number the items desired.

1. Tube Testing Plug

New test plugs, for use anywhere that is desirable to shut off the end of a tube temporarily, have been announced by the Imperial Brass Manufacturing Co.

These plugs are said to be especially convenient for use in instrumentation, radiant heat, refrigeration, L. P. gas and similar installations. They make it possible to test tubing installations before they are put into service or when trouble shooting for leaks.

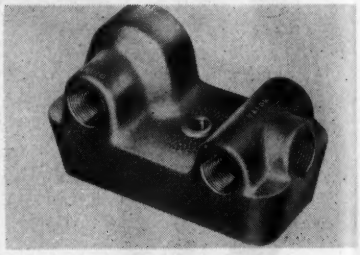


Plug is inserted in end of tube and wing nut is tightened. This expands synthetic rubber portion of plug and seals tube. It is stated that these plugs will hold pressures up to 100 lbs. and can be used on all liquid or gas tubing lines except those where material conveyed would deteriorate synthetic rubber. Plugs are available in five sizes: ¼ in., ⅜ in., ½ in., ⅝ in. and ¾ in. OD.

Imperial Brass Manufacturing Co.

2. Tank Adapter

A revolutionary new "all in one" forged steel mobile tank adapter that saves up to 80% in labor and material costs and permits LPG motor fuel tank manufacturing methods never before possible is the latest development of the S and L Manufacturing Co.



Forged of SAE 10/20 mild steel, the S and L mobile tank adapter's out-

READERS' SERVICE COUPON

BPN

Just fill in this coupon for Products information and copies of new publications, and mail to

BUTANE-PROPANE NEWS, 198 S. Alvarado St., Los Angeles 57, Calif.

9/53 Fill in numbers of items in which you are interested.

No. ..... No. ..... No. ..... No. .....

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NAME AND TITLE.....

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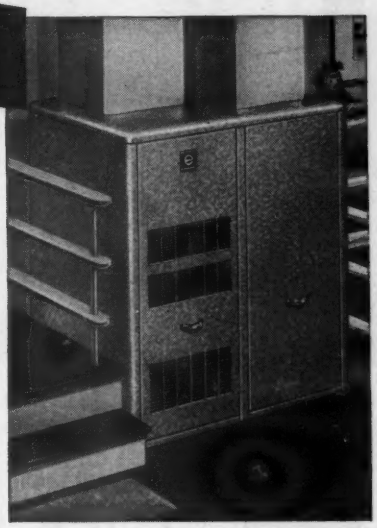
CITY.....ZONE.....STATE.....

With these 2 gas fired Winter Air Conditioners by AMERICAN-Standard

you're all set to sell the majority of your prospects!

The SENECA
for basement installations
IN 4 SIZES
ranging from 85,000 to 150,000 Btu input per hour



■ For carefree heating comfort, this fully automatic winter air conditioner is second to none. The heating element is corrosion-resistant copper bearing steel welded into an integral unit. Correctly placed baffles divert hot gases to sides of elements, heating entire element uniformly. Individual controls are the finest available. Burners are cast iron with patented high temperature alloy ribbons. Manifold piping and controls are sub-assembled. Burns natural, mixed, manufactured, liquefied petroleum, or LP-air gas.

The WYANDOTTE
for utility room installation
IN 5 SIZES
ranging from 55,000 to 125,000 Btu input per hour

Featuring the same fine engineering and workmanship as the Seneca, the Wyandotte occupies minimum space for installation in utility rooms, alcoves, closets or other out-of-the-way locations on the first floor, or in small basements. Safe, efficient, smart in appearance, the Wyandotte can be installed on combustible floors. The Wyandotte is shipped completely assembled and pre-wired, burns natural, mixed, manufactured, liquefied petroleum, or LP-air gas. For more detailed information, contact your wholesale distributor. American-Standard SUNBEAM Air Conditioner Division, **American Radiator & Standard Sanitary Corporation, Bessemer Building, Pittsburgh 22, Pa.**

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Serving home and industry
AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS & WALL TILE
DETROIT CONTROLS • KEWANEE BOILERS • ROSS EXCHANGERS • SUNBEAM AIR CONDITIONERS

side measurements are 6¾ in. by 3½ in., and it is designed and constructed to give the necessary outlets for vapor return, vapor withdrawal, liquid fill, liquid withdrawal, pressure relief and fixed liquid level gauge in one complete easy-to-install unit. To obtain these outlets in the present tank manufacturing method, the tank fabricator is required to cut six holes in the tank, but with the S and L mobile tank adapter only one hole is necessary. With the new tank adapter, only two pipes are needed instead of the five that are now called for.

Made on a natural forged taper of 10°, the tank adapter may be installed in the side and/or top of the tank. The steel skirt of the adapter also eliminates welding distortion problems and heat damage to the pipe threads since some of the outlets come into direct contact with the welding heat.

The S and L adapter comes in two convenient sizes: with five ¾-in. outlets, and a ¼-in. fixed liquid level gauge outlet, or with four ¾-in. outlets, one 1¼-in. fill valve outlet, and a ¼-in. fixed liquid level gauge outlet.

S and L Manufacturing Co.

3. Power Drive

The new Model-D power drive of Beaver Pipe Tools, Inc. is now the lightest and smallest all-purpose

power drive available, according to the manufacturer.

By replacing the old cast steel-iron metal housing and chuck with aluminum, Beaver has cut total weight of Model-D to about 100 lbs. Other design changes include more convenient location of switch, lever safety lock on switch and bronze spindle bearings.

The light weight of the Model-D makes it portable; one man can lift and carry it. Large side openings serve for motor ventilation and hand grips for moving. Tools are stored conveniently on the flat top. The unit can be used easily in bench, truck or with pipe legs right on the job location.

Beaver Pipe Tools, Inc.

4. Wire Braided Hose

Ironsides Butane-Propane hose, a new type of butane hose combining layers of horizontally braided steel wire and rayon cord reinforcement, has been announced by Quaker Rubber Corp.

Specially developed for the handling of liquefied petroleum gases,

this hose features a non-porous and oil resistant rubber tube and extra strong reinforcement. Each size has a minimum burst of 1750 psi, with actual burst pressures exceeding 2300 psi. Each length has two separate static wires, interlaced with the reinforcing braids, to insure full static conductivity.

Made on a mandrel which insures uniform inside diameters for quick, positive coupling, Quaker's Butane-Propane hose is available in sizes from ½ in. to 2 in.

Quaker Rubber Corp.
Division of H. K. Porter Co.

5. Air Conditioning Unit

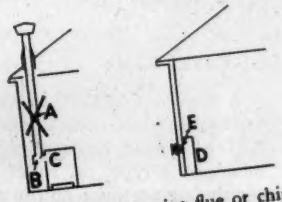
Bryant Heater's new year-round home air conditioning "Command-Aire" twin units, designed to bring the cost of full-time home comfort within the reach of the average home owner, has been introduced.

A complete, low-cost home air conditioning system, the "Command-Aire" twins may be installed together or, when desired, separately. Installation of the heating unit may be followed at a later date by the addition of the cooling unit without the necessity of adding ducts or making other alterations.

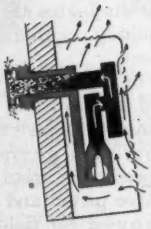
Engineered for both the new home and replacement markets, the Command-Aire twins utilize either gas or oil burning heating units. Separate blower systems in each of the twin units assure the proper delivery of air for both heating and cooling, provide for better dehumidification control, and prevent overloading the furnace blower.

Bryant, a division of Affiliated Gas

A UNIQUE VENT MAKES EASY LOW-COST INSTALLATION!



No need for expensive flue or chimney (A), or draft diverter (B). No wasted floor space with out-in-the-room heater (C). H. C. Little heater (D) mounts flush to wall. Self contained vent (E) projects through the wall, drawing combustion air IN, expelling combustion gases OUT.



Key to cross-section drawing of heater:

- Air for combustion
- Gases of combustion
- Room air circulation

A HUGE MARKET—H. C. Little vented gas wall heaters are equally well suited to *new construction—modernization—replacement—expansion.*
Their many advantages make them ideal for *Basement-less Houses—Apartments—Motels—Week-end Cabins—Auto Courts—Attic and Over-Garage Rooms—Hobby Rooms—Farm Utility Buildings—Garages—Factory Offices.*

Other Sales-Building Advantages:

- Economical Operation • Silent Operation—
- Beautiful Baked-On Hammertone Finish—
- Compact, Space-Saving Design—Only 10"x 22¾"x 31¼".
- Easy, Low-Cost Installation—No wall opening for unit needed. 8" vent opening and four mounting screws do the trick.
- Clean Operation—No moisture, no sweating walls or windows.
- Zoned Heating—With two or more units, temperatures in each zone may be individually regulated.
- Automatic Control—Built-in temperature control. No wall mounted thermostat. No wiring to install.
- Power Failure Can't Prevent Heat—Automatic controls have no outside electrical connection.
- Burn Any Gas—Natural, manufactured or LP. (16,000 BTU/hr. input rating).
- A.G.A. Approved and Factory Guaranteed—Over 200,000 H. C. Little installations Coast to Coast assure satisfaction.

SEND COUPON FOR PROFIT-MAKING FACTS TODAY!

H. C. Little Burner Co., Inc. Dept. BP-9
San Rafael, Calif.
Send me profit-making facts on your Gas Wall Heaters.

Name_____

_____

_____

25th Anniversary H.C. Little

H.C. Little
Burner Company, Inc.
SAN RAFAEL, CALIF.

DISTRIBUTORS IN 18 PRINCIPAL CITIES

Equipment, Inc., was among the first to offer a complete year-round residential air conditioning system. Bryant also is a major producer of individual room air coolers.

Bryant Heater Co.

6. LPG Transfer Unit

A new simple, safe LPG transfer unit for moving liquid propane and butane gas from storage tank to farm tractor is announced by Fine Products Co.

Called the "Fineway" unit, it follows the vapor transfer system, wherein gas pressure in the tractor tank is reduced and when run through the "Fineway" unit back to the storage tank, builds up pressure to force the LPG into the tractor tank.

The simplicity of transfer with the "Fineway" unit makes quick, easy

handling of LPG without fire hazard. Hand pumping is relieved by a 110-volt A.C. motor, or a 6-volt low amperage motor for fuel use. Transfer rate is 8 to 10 gals. per minute.

Fineway motors and switches are explosion-proof, and UL approved. A complete descriptive folder of the line is available on request.

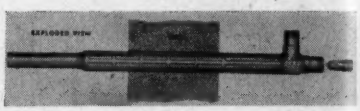
Fine Products Co.

7. Wall Service Fitting

A new one-piece wall service fitting is now in production by M. B. Skinner Co. The new fitting is said to be designed to promote safety and economy in making services through walls.

The device consists of an extra heavy malleable iron tube with the end outside the wall turned to pipe size, to connect to the service pipe with a compression coupling. The part that passes through the wall is heavily ribbed, serving to anchor the fitting when grout is tampered around it and into the hole in the wall. Accidental extreme strain on the service line will thus cause it to pull off at the compression coupling rather than inside the building.

The end inside the wall incorporates a branch tee and an angle valve of tamper-proof design. Thus the



regulator or meter may be attached to the outlet of the fitting direct, saving a valve and many thread joints.

Economies include one-piece construction which eliminates extra parts and labor, fewer threaded joints, simple installation and longer life. The fitting is available in ¾-in., 1-in. and 1¼-in. pipe sizes.

M. B. Skinner Co.

8. Relief Valve

A recent addition to the line of heating equipment sold by the Eclipse Fuel Engineering Co. is a new piston-type, oil relief valve for regulating pressure on the company's new series "CF" closed flame gas-oil burners.

This new valve, according to Eclipse, does away with objectionable chattering and pulsation. A cylindrical steel piston closes the port with a quick, positive shearing action, which eliminates the pounding noise commonly caused by valves with disc seats.

Pressure in the new valve is closely regulated by adjusting tension of the spring inside the piston. Five different spring sizes permit a wide range of pressures from 0 to 500 lbs. The valve piston and spring are easily removed for field servicing without dismantling the entire valve. These relief valves are available in four sizes from ⅜-in. port to 1-in. port.

Eclipse Fuel Engineering Co.

9. LPG Tank

Seven thousand water capacity and 6000 propane payload capacity semi-trailer tanks are currently being sold and fabricated for legal operation in Texas and other southwestern states by Superior Tank & Construction Co.

The extreme emphasis on greater payload for propane equipment has been noted by Superior's engineers and they are designing propane tank equipment as light as possible. The tanks are custom-built for each operator's individual requirements to

haul the maximum propane payload possible in his area.

Superior Tank & Construction Co.

10. Incinerator

The Mueller "Climatrol" gas-fired incinerator, a disposal for garbage and trash, burns anything non-metal or glass and has a 1.6 bushel capacity. Operating with a continuous burning flame the incinerator dehydrates and then completely burns the charge. Once installed and lighted, it requires no further service.

Entirely lined with casing to resist heat penetration, the "Climatrol" incinerator has a steel ash receptacle which needs emptying only once a month under normal conditions.

Standard equipment includes a heavy gauge all electric welded steel combustion chamber and an expanded metal flue protector within the combustion chamber. The unit is completely assembled and has no moving parts.

L. J. Mueller Furnace Co.

11. LPG Hose

The first butane and propane hose for engine and other permanent-type applications ever to receive Underwriters' Laboratories listing has been announced by Peter F. Hurst, president of Aeroquip Corp.

The hose, type 1533, has several design features that contribute to increased life, improved utility, and greater safety. Exceptionally light in weight, flexible, and easy to handle, "Aeroquip" Butane-Propane Hose is impervious to all L. P. gas products, and permits flexing at temperatures as low as —45° F. without cracking or leaking.

A reinforcing steel wire braid with-

Presenting the COMPACT Model 40-G

Humphrey Automatic Gas Unit Heater

HUMPHREY PRODUCTS

With — Non-clogging Pilot . . . Tilting Front . . . Universal Burner . . . Six-Flue Heat Exchanger . . . Rear Vent . . . Dynamically and Statically Balanced Fan . . . Built-in Fan Control . . . Quiet, Heavy Duty Fan Motor . . . and Full Safety Controls.

Here's the new addition to the great Humphrey line of Automatic Gas Unit Heaters. It's the Model 40-G, a small size, moderate capacity, economically priced unit that's ideal for those many smaller offices, shops, garages, filling stations, etc.

The 40-G provides 40,000 b.t.u. input capacity in a cabinet that is only 17″ x 22⅜″ x 13¼″. It is a handsome unit, with its baked, hammertone enamel finish, and it is superbly built, with many exclusive Humphrey features.

The 40-G has a cast iron, raised port, universal type burner; Humphrey exclusive stainless steel, non-clogging pilot; exclusive tilting front; new six-flue heat exchanger of special heat and corrosion resistant high tensile alloy steel and positive, dependable safety controls. Approved for 6″ clearance at top and sides.

Write for free literature giving full details and specifications.

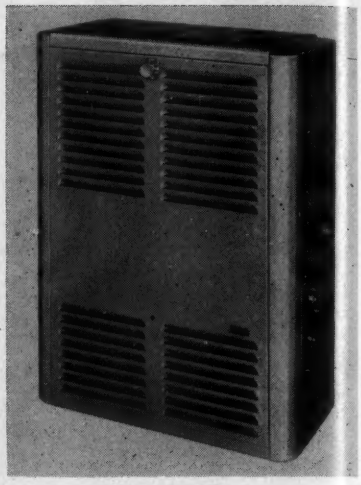
GENERAL GAS LIGHT COMPANY • KALAMAZOO, MICHIGAN

in the hose body serves the dual purpose of giving the hose its great strength, and providing for safe conductivity of static electricity through contact of the braid ends with the hose fitting. Other construction features of the hose include a seamless synthetic rubber inner tube, and two heavy cotton braids (one forming the exterior cover) for added reinforcement. The hose assembly includes the well known "Aeroquip" detachable, reusable fittings, which permits users to make their own hose lines to required lengths from coils of bulk hose.

Aeroquip Corp.

12. Wall Heaters

The big feature of the new H. C. Little wall heater is a self-contained vent that draws combustion air in from outdoors and expels all products of combustion back to the outdoors. This means absolute safety for the user, because no oxygen can possibly be taken from the room to support combustion, and no fumes, gases, or any product of combustion can possibly enter the room air that the user breathes.



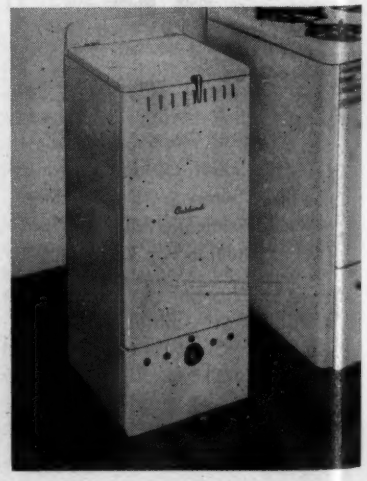
Other advantages of the GW-16 are: compact design, only 10" x 22¾" x 31¼"; flush mounting to the wall; no stack or chimney needed; simple, low cost installation. The elimination of a draft diverter conserves room heat, saves fuel and results in very economical operation. Each H. C. Little GW-16 gas wall heater is a complete heating plant, with its own vent and automatic temperature control system.

The GW-16 has a 16,000 Btu/hr. input rating with all gases.

H. C. Little Burner Co., Inc.

13. Incinerator

The Oakland incinerator, a smartly designed appliance that fits with



PACE SETTING . . .

REZNOR FM ROOM HEATERS

BACKED WITH SOLID SALES PROMOTION MEANS GREATER PROFITS FOR YOUR BUSINESS

REZNOR MAKES YOUR SELLING JOB EASIER

- Never-ending national advertising does a consistent job of preselling the famous Reznor name to your customers and prospects . . . conditioning them to accept Reznor as the quality product.
- Since 1888, the Reznor name has been recognized as the dependable manufacturer of gas heating equipment. Public acceptance is assured.
- Reznor maintains district offices throughout the country with competent representatives to aid your selling.
- Reznor supplies a mat and script service and participates through distributors in newspaper and radio programs.
- Creating demand is standard procedure at Reznor. Dealers are supplied with selling helps including broadsides, catalog sheets, price sheets, envelope stuffers, colorful 8½" x 11" folders, specification sheets, catalogs and other advertising aids.

YOU JUST CAN'T MATCH THESE FEATURES

Housed in a sparkling PERLITE finish console type cabinet, Reznor FM room heater features a built-in draft diverter; adjustable louvers; summer-winter switch and 2-speed fan motor; famous name controls; exclusive "Air Form" aluminized heat exchanger and other selling adiantages. Reznor FM heaters are available in 25, 50 and 75,000 BTU sizes. Also available, is a complete line of Reznor suspended Unit Heaters, Duct Furnaces and Horizontal Furnaces to meet other heating requirements of office, store, home and factory.

CONSISTENT HEAT AUTOMATICALLY CONTROLLED

Completely automatic wall thermostat takes the peaks and valleys out of winter heating. You simply set it to your comfort point and forget it. Outside weather changes do not affect inside comfort. And in the summer —a flick of a finger turns on the big fan at higher speed to circulate cool air throughout the entire house.

REZNOR

The World's Largest-Selling Gas Unit Heater

REZNOR MANUFACTURING COMPANY

MERCER, PENNSYLVANIA

SUSPENDED UNIT HEATERS
PROPELLER AND BLOWER TYPES
25,000 to 200,000 BTU

PAC HORIZONTAL FURNACE
CENTRAL HEATING/UNIT HEATING
75,000; 100,000 & 125,000 BTU

REZNOR MANUFACTURING COMPANY
4 UNION ST., MERCER, PENNA.

Please tell me how to take advantage of the Reznor opportunity.

Name.....

Firm.....

Address.....

City..... Zone..... State.....

other streamlined kitchen equipment, or for installation in furnace room where its mild heat reduces basement moisture, will burn all things combustible in a smokeless, odorless process.

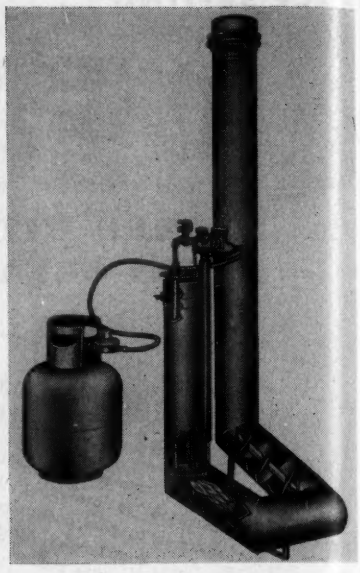
Of one-bushel capacity, the Oakland incinerator features a cast-iron burner located directly under center of grate for concentrated heat and maximum burning efficiency. Sides and top are insulated with 1 in. of Fiberglas to hold heat inside incinerator. Standard equipment for LPG operation includes a safety pilot with automatic shut-off.

The Oakland incinerator is available in two finishes: white porcelain enamel for kitchen use and green metalescent finish for basement or utility room.

Oakland Foundry Co.

14. Stock Tank Heater

Siebring, manufacturers of a complete line of stock tank heaters, announces an entirely new radiator design for their gas burning model stock tank heater. The new radiator has a continuous, gradual, elevated rise throughout the heat travel that assures constant burner operation. The new design eliminates all dead air pockets that have always proven a hazard in gas burning operation. The continuous air flow also provides draft stoppage that sometimes interrupts burning.



The new radiator design is standard equipment on all Siebring gas burning units—the fully automatic, semi-automatic and manually controlled models. In addition to the continuous heat flow design, Siebring heaters have the advantage of their exclusive patented heat baffle, which retains a high percentage of all the heat and reduces heat loss through the smoke stack to an absolute minimum.

Siebring Manufacturing Co.

500 New Petrochemicals Appear On Market

Over a recent 12-month period, some 500 new petrochemicals appeared on the market and went into the service of agriculture, industry, and the home. Among the final products of this chemical conversion industry are paints, plastics, technical alcohols, insecticides, and synthetic rubber. Important among the ingredients used in these processes are butane, iso-butane, propane, and propene, all of which are contained in LPG. Chemical requirements during 1952 accounted for 4.9% of the marketed L. P. gas.

THE EMPIRE GAS FLOOR FURNACE

SILENT AS A KITTEN WITH AN EXTRA SET OF FOOT PADS!

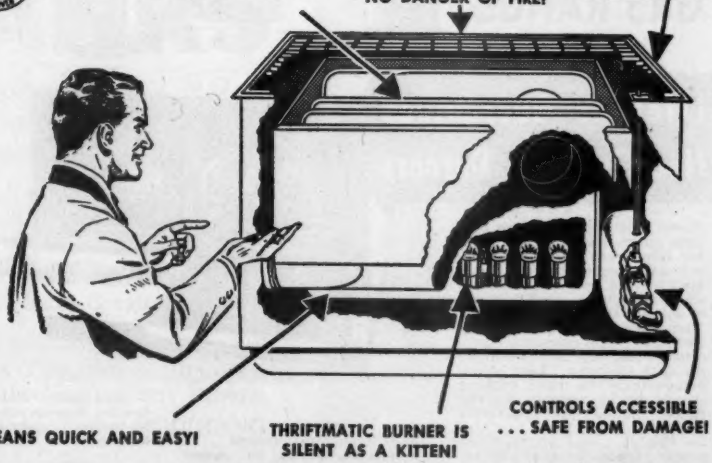
Can't Be Beat

Make extra sales with the furnace that has all these features!

Just a glance at the Empire Gas Floor Furnace will immediately tell you why it sells so easily . . . and **stays** sold to build big volume **repeat** business for you.

NO BOOM! NO BANG! NO TICK!

The FAMED "Thriftmatic" Gas BURNER



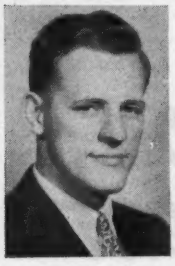
SEE YOUR LOCAL EMPIRE REPRESENTATIVE OR WRITE DIRECT TO **EMPIRE**

EMPIRE STOVE COMPANY

BELLEVILLE, ILLINOIS

WORLD'S LARGEST MANUFACTURER OF *Gas* FLOOR FURNACES

A. O. Smith Corp.



J. H. Brinker

J. H. Brinker, who has been assistant executive in charge of distribution, has been appointed director of marketing of the A. O. Smith Corp., Milwaukee. His activities include direct supervision of advertising and sales promotion, of exhibits and displays of company products and of the market analysis department. Mr. Brinker has been with A. O. Smith since 1947.

Kenneth E. Lofgren has been named sales promotion manager of the Permaglas-Heating Division of A. O. Smith Corp. at Kankakee, Ill., in addition to his present duties as division advertising manager, as announced by S. E. Wolkenheim, general sales manager.

George P. Hough, Chicago, who is one of the assistants to the president of the A. O. Smith Corp., has been given the additional duty of chairman of the operating committee of the Permaglas-Heating Division at Kankakee.

Lee W. Hanson, formerly with Shell Petroleum Co., has joined the Liquefied Gas Products Division of A. O. Smith Corp. as the sales representative covering south and central Texas out of Houston.

Mr. Hanson was with the L. P. gas marketing division of Shell for the past eight years. The appointment was announced by Frank W. Row, manager of the southern regional office of the division at Houston.

Century Gas Equipment Co.

Frank Pilling, president of Century Gas Equipment Co., Lynwood, Calif., has announced the appointment of Thomas R. Clark as sales manager, succeeding Andrew Bauer, who recently passed away. Mr. Clark is well known in the industry, having served as field engineer and assistant sales manager of Century for the past several years.

Imperial Brass Manufacturing Co.

James A. Norris

James A. Norris, formerly with Kerotest Manufacturing Co., has been placed in charge of the Los Angeles office, warehouse, and southern California and Arizona territories for Imperial Brass Manufacturing Co., Chicago. He will be assisted by Chester Weinert.

North Texas Tank Co.

E. B. Bickly, Jr.

Ed. B. Bickly, Jr. is the new general sales manager for the North Texas Tank Co., Denton, Texas, manufacturers of L. P. gas equipment. Serving the LPG industry exclusively, the North Texas Tank Co. furnishes a complete line, including truck tanks, transports, tractor and motor fuel tanks, portable L. P. gas filling stations, etc., as well as bulk storage, domestic systems and anhydrous ammonia tanks.

Mr. Bickly comes to North Texas Tank Co. from Butler Manufacturing Co., where for the past six years he served as engineering sales representative for the state of Kansas and part of Oklahoma.

Geo. D. Roper Corp.

F. R. Dickerson was elected vice president and general manager of the Geo. D. Roper Corp., Pump Division, at a meeting of the board of directors.

Mr. Dickerson attended Beloit College and the University of Illinois, and started his business career with Roper as sales engineer in 1936. He became sales manager in 1948 and general manager of the Pump Division in 1951.

As a part of the plan to streamline operations and make for more efficient management of the corporation's diversified enterprises, Stanley H. Hobson, president of the Geo. D. Roper Corp., also announced other organizational changes:

C. R. Oehler, assistant treasurer and controller, was appointed treasurer.

L. R. Jensen, works manager and vice president of the ordnance division, is now operations vice president.

J. H. Makemson, vice president and treasurer, becomes vice president and general manager of the appliance division.

E. C. Sorby, vice president in charge of appliance sales, is the new vice president in charge of trade and public relations.

H. D. Weigel, assistant works manager for the appliance and ordnance divisions, was named general manager of the ordnance division .

C. A. Miller, assistant controller, was appointed controller.

W. F. Hinz, assistant secretary, also becomes assistant treasurer.

Tappan Stove Co.

J. T. Boes and W. G. Martin have been appointed territory managers for the Tappan Stove Co., A. B. Ritzenthaler, vice president in charge of sales, announced recently.

Mr. Boes is the new Tappan representative in Philadelphia, and Mr. Martin will represent Tappan in a sales territory consisting of the state of Delaware and counties in Maryland, New Jersey, Pennsylvania and Delmarva peninsula tip of Virginia.

International Manufacturing Co.

Three Minnesota businessmen have purchased a third of the stock of the International Manufacturing Co., Denver, it was announced recently by Vernon Hines and Ralph Ennis, officers of the firm.

The new stockholders, who have been added to the board of directors, are Oliver Ellingson, president of Minnesota Mobile Homes; H. P. E. Skoglund, president of North American Life and Casualty Co., and P. J. Sundberg, executive secretary of Brown & Bigelow. All are from the Minneapolis-St. Paul area.

COLUMBIAN
BUTANE-PROPANE
Transport Trucks • Semi-Trailers • Storage Tanks

(Above) 4,000-gal. (4,848 water gal.) Double-Barreled L.P. Transport.—LFT Mack Truck

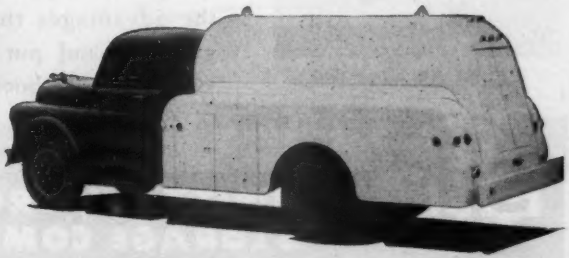
EXPERTLY DESIGNED — QUALITY BUILT

• (Above) 1,463-Gal. (1,774 water gal.) Twin Tank Truck.

One of the first in the field, Columbian has won recognized leadership in the building of Butane-Propane transportation, delivery and storage equipment. With 60 years of tank building experience behind us and a reputation for advanced design and engineering excellence, Columbian offers you today's "smart buy" in modern Butane-Propane Transport Trucks and Semi-Trailers—manufactured in any capacity you need—engineered to meet limitations of your state regulations.

Columbian Underground and Above-Ground Storage Tanks — are available in all sizes. All are A.S.M.E. tanks.

• (Below) Columbian Full Skirted LP Delivery Truck. Pump mounted with direct driven power take-off. Outlet control valves may be furnished in curb side or rear cabinet. Print-o-meter also in rear cabinet.



***WRITE NOW* for complete information about Columbian Butane-Propane transportation, delivery and storage equipment.**

COLUMBIAN STEEL TANK CO., P.O. Box 4048-C, Kansas City, Mo.

Eureka Williams Corp.

Howard Haug has been appointed field representative for the Williams Division of Eureka Williams Corp., Bloomington, Ill., manufacturer of "Oil-O-Matic", "Gas-O-Matic" and "Air-O-Matic" heating and air conditioning equipment. His territory will include in part Maryland, Ohio, Pennsylvania and West Virginia, with headquarters near Pittsburgh.

Paul B. Cressor, Jr. has been promoted to manager of purchasing for the Eureka Williams Corp., it was announced recently by H. W. Burritt, president. The corporation, with headquarters in Bloomington, Ill., manufactures vacuum cleaners, heating and air conditioning equipment, and waste food disposers, and is also engaged in production for defense.

Servel, Inc.

Keith Carpenter of Denver has been named as a retail sales development representative for Servel, Inc., according to an announcement by L. E. Libby, director of the company's retail sales development.

Mr. Carpenter was formerly a city salesman for Savage & Sons, of which his father is general manager. He also was previously a retail appliance salesman for Daniels & Fisher, Denver, and for the Broadway Department Store, Hollywood, Calif.

G. Howard Christine, contract sales manager of Servel, Inc., has been named as an advisory member of an important committee of the National Association of Housing Officials, according to an association announcement.

Mr. Christine will represent the refrigerator industry on the association's National Exhibits Committee, it was announced by John D. Lange, executive director of NAHO.

Bert Cole, eastern regional manager of Servel, Inc., has been named vice president and member of the board of Servel-New York Corp., the company's distributing subsidiary in the New York metropolitan area and eastern New York state.

The announcement was made by W. Paul Jones, who is president of Servel-New York as well as the parent company.

Z. T. Caldwell

W. J. Norriss

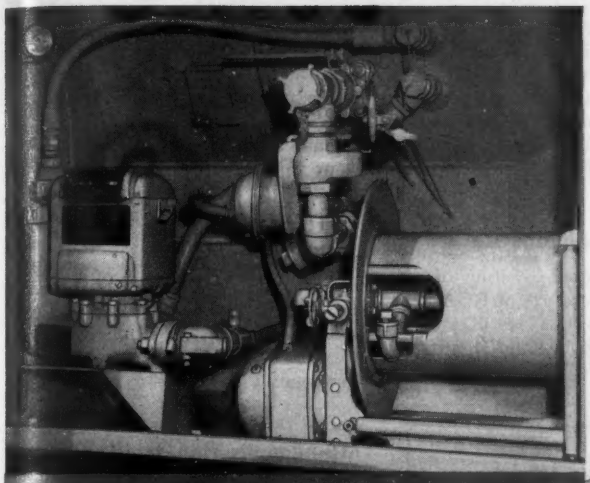
William J. "Bill" Norriss recently joined the Z. T. Caldwell Organization, Malvern, Ark., and will represent them in north Mississippi, Memphis and part of west Tennessee on Crown ranges, Premier ranges and heaters, Adams heaters and the U.S.-Lawson line.

Mr. Norriss brings with him a wealth of appliance selling experience, having been a dealer and also a district manager for Appliance Distributors in the Memphis, Tenn., trading area. He is a native Mississippian, but has been a resident of Memphis for the past 19 years.

Whirlpool Corp.

Robert E. Beckwith has been appointed director of market research for Whirlpool Corp., it was announced recently by L. W. Howard, director of sales promotion and advertising.

Mr. Beckwith comes to Whirlpool from Flexonics Corp., Chicago, where he was sales promotion manager and head of the market research department. From 1950 to 1952 he was market research analyst for Pheoll Manufacturing Corp., Chicago.



Illustrated is Butler L. P. Gas Truck Tank built for General Natural Gas Corp. of New York, and equipped with Hannay Hose Reel with Explosion-proof Electric Motor. Modern installations such as this are streamlining deliveries for LPG distributors everywhere.

HANNAY HOSE REELS

Proved and Approved by Leading LPG Distributors for Safe, Speedy, Superior Service

These Features of the HANNAY HOSE REEL with Explosion-Proof Motor Speed Up Deliveries, Cut Costs

- Sturdy construction and simple operation reduce maintenance costs.
- Explosion-proof switch with easy push button control.
- Especially designed explosion-proof heavy duty motor, Underwriters approved.
- No gears to shift; no clutch to engage.
- Safe rewind speed, always under control.
- Rolled edges on disc, smooth spool . . . no scuffing, no damage to hose.
- Ball bearing Chiksan swing joint . . . does not carry weight of reel.

All over the nation, under all sorts of weather conditions, Hannay Hose Reels are helping LPG distributors make faster, more economical, safer deliveries. They reduce time at every stop, extend the life of expensive hose, eliminate mess and annoyance, keep delivery men happy.

The Hannay Hose Reel Model EPB with Explosion-proof Electric Motor and simple push button control is the most efficient reel made . . . the most completely satisfactory reel your money can buy. Manually operated models are also available. Ask your equipment jobber or write us for full information.

HANNAY *First Name in HOSE REELS*

Power and Manually Operated Hose Reels for Every Purpose

HANNAY
REG. U.S. PAT. OFF.
HOSE REELS
CLIFFORD B. HANNAY & SON, INC.
WESTERLO, NEW YORK

Affiliated Gas Equipment, Inc.

K. T. Davis has been appointed director of engineering and product development for Bryant Heater Division, Affiliated Gas Equipment, Inc., it was announced recently by James A. Hughes, Bryant general manager and vice president of the firm.

In his new capacity, Mr. Davis will direct the further development of Bryant's complete line of quality home and commercial heating, air conditioning and water heating equipment.

Mr. Davis, who joined Bryant in 1942, is an authority on the design, performance and installation of home and commercial heating and air conditioning equipment. He served for nine years as Bryant's chief engineer, and since 1952 has been manager of Bryant's sales engineering department.

RCA Estate Appliance Corp.

The newly created position of director of quality control of RCA has been assigned to Charles Keepers, former manager of the Cincinnati division of Wayne Pump Co. Mr. Keepers is a member of the American Society of Automotive Engineers.

A realignment of the operational staff of RCA resulted in the following appointments: Ellsworth Simms, former chief engineer, to vice president in charge of manufacturing; Gordon R. Kemp, former assistant general manager, to vice president and treasurer; Robert Ireland, former chief cost accountant, to controller; Richard Blankenship, former production manager, to materials control manager, and Hilbert Bisdorf, former assistant to the production manager, to production manager.

Minneapolis-Honeywell Regulator Co.

E. M. Toussaint

E. M. Toussaint has been appointed general manager of the Appliance Controls division of Minneapolis - Honeywell Regulator Co., with headquarters in Los Angeles, it was announced by Paul Wishart, vice president and general manager of the company.

John E. Haines, a vice president of the company, has been handling the duties of general manager of the Appliance Controls division in addition to his other responsibilities as head of the company's Commercial division. He now will devote full time to the Commercial division's expanding activities.

John Huff will continue as assistant general manager of the Appliance Controls division, a position he assumed April 1.

The division, which manufactures automatic controls for water heaters, floor furnaces, wall heaters and central heating plants, is currently undergoing major expansion involving the construction of a new plant at Gardena, Calif.

Rockwell Manufacturing Co.

Richard P. Murlless, 5823 N. 18th St., Phoenix, Ariz., has joined Rockwell Manufacturing Co.'s Meter and Valve Division as sales engineer for the state of Arizona.

Mr. Murlless, who was associated with the Valley National Bank in Phoenix for the past six years, will assume his new duties in Phoenix early in August after temporary assignment to Rockwell's Los Angeles office.

EXPAND SALES

in Two Directions with TEMCO Automatic Gas Wall Heaters!

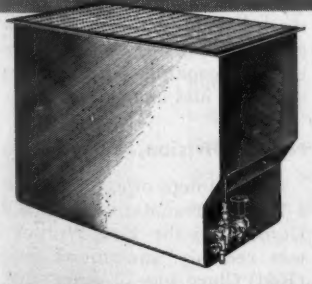
DIRECTION ONE—You can take care of those hard to heat jobs . . . two story houses . . . houses with slab foundations . . . remodeling jobs you couldn't touch before.

DIRECTION TWO—You can go out beyond the gas mains because TEMCO Automatic Gas Heaters are TEMCO engineered and AGA approved for LP Gas. Every country or surburban house is a prospect.

MORE TO SELL . . . MORE TO SELL WITH

Built by America's Gas Heat Specialists . . . available in single and dual wall models . . . require no floor space . . . fit between standard 16" O. C. studding.

Backed by powerful national advertising . . . the most generous cooperative advertising plan in the industry . . . dealer aids . . . direct mail . . . everything you need to sell. For the full story, return the coupon today.



TEMCO AUTOMATIC GAS FLOOR FURNACE
Needs no basement . . . fits right into the floor . . . 20 year warranty on heat chamber . . . shallow construction.

TEMCO, inc.
NASHVILLE, TENN.
BUILDER OF OVER 1,250,000 GAS APPLIANCES

TEMCO, Inc., Dept. B-511, Nashville 9, Tenn.

Please send catalogue and full information on the profit possibilities of TEMCO Automatic Gas Heaters.

NAME _____

ADDRESS _____

CITY _____ **ZONE** _____ **STATE** _____

Trane Co.

Appointment of A. James Hackl as manager of the Dallas sales office has been announced by Thomas Hancock, vice president in charge of sales for The Trane Co., La Crosse, Wis., manufacturers of air conditioning, heating and ventilating equipment.

Motor Wheel Corp.

Richard N. Ruecker has been appointed district manager for the Duo-Therm Division of Motor Wheel Corp., Lansing, Mich., according to an announcement by Karl Egeler, vice president of Duo-Therm sales.

Mr. Ruecker's territory will include the states of Arizona, Colorado, New Mexico and Utah, besides portions of six other southwestern states.

Dixie Products, Inc.

Al Engstrom has been appointed sales representative for Dixie Products, Inc., manufacturers of gas ranges, it has been announced by Marvin Rymer, vice president of the Cleveland, Tenn., company.

Mr. Engstrom will cover western Pennsylvania, northern West Virginia and Youngstown, Ohio. His headquarters will be in Erie, Pa.

Kerotest Manufactuirng Co.

Russell H. Coe

Russell H. Coe has been appointed sales representative for the Kerotest Manufacturing Co., Pittsburgh, in the northeast section of the U. S., according to an announcement by R. B. Tullis, president of Kerotest. Mr. Coe will handle sales of Kerotest valves and fittings to petroleum transmission and refining companies, and to industrial firms in the area.

Mr. Coe has served as test engineer in the Indiana Harbor plant of Youngstown Sheet & Tube Co., and as a sales engineer for that firm in seven midwestern states. He later became a vice president of Pipe Line Service Corp., and more recently assisted in organizing the protective coatings division for Pittsburgh Coke & Chemical Co.

Samuel Stamping & Enameling Co.

R. E. Solomon

R. E. Solomon has been appointed director of research for the Samuel Stamping & Enameling Co., Chattanooga, Tenn.

Mr. Solomon was formerly associated with the same company as chief engineer from 1948 to 1952, and more recently was with a prominent Pittsburgh manufacturer.

The Samuel Stamping & Enameling Co. are manufacturers of gas heating and cooking appliances as well as electric cooking appliances, job stamping and enameling.

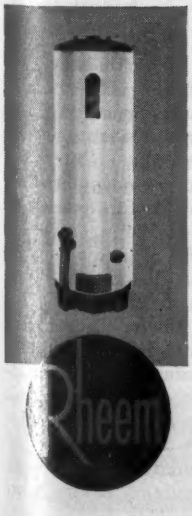
Norge Division, Borg-Warner

Appointment of John D. Newell as a field representative for the Norge Division of the Borg-Warner Corp. was recently announced by H. L. (Red) Clary, vice president in charge of sales.

Mr. Newell will be headquartered in Minneapolis. His territory includes Minneapolis, Sioux Falls, Omaha, and Fargo.

TIPS ON SELLING WATER HEATERS — REMEMBER . . .

A MAN IS THE WORLD'S WORST SKEPTIC



Whatever his name, he's a doubting Thomas. He frowns at any assurance you give him unless it's in print. But show him in writing how the product is backed and his smile is as big as his order.

There'll be no doubt in his mind when you show him a Rheem Water Heater. First, because you can show him how every Rheem is Pressure-Proved at the factory, works perfectly before it gets to him. Second, you can show him the Rheem warranty, a full warranty that says what it means and means what it says.

There'll be no doubt what this twin Rheem assurance will mean to you. As it has to so many dealers like you, it means more sales, bigger profits. It means that there is no line to match the Rheem Water Heater line—for your customers or for you.

RHEEM MANUFACTURING CO. BP-92
4361 Firestone Boulevard, South Gate, Calif.
Send free, illustrated water heater booklet.
Name _____
Address _____
City _____ State _____

RHEEM MANUFACTURING COMPANY

World's Largest Manufacturer of Automatic Storage Water Heaters

Guaranteed by Good Housekeeping

Delta Tank Manufacturing Co.

Delta Tank Manufacturing Co., Inc. has just been awarded an additional $5,185,780 defense contract by the Birmingham Ordnance Division.

In announcing the awarding of this contract, Hal S. Phillips, president of Delta Tank, stated that this was the sixth defense contract awarded to his company during the present defense program. Mr. Phillips pointed out that during World War II, Delta manufactured barges, buoys and shell casings.

Locke Stove Co.

E. M. Douthat, Jr. was named sales manager of Locke Stove Co., Kansas City, Mo., according to a recent announcement made by the firm.

A. O. Smith Corp.

Construction has been started at Kankakee, Ill., on a $190,000 one-story warehouse with 48,000 sq. ft. of area in which the Permaglas-Heating Division of A. O. Smith Corp. will be able to store more than 15,000 finished water heaters. The new building will double the present inventory-on-hand capacity of 8000 units.

Titan Valve & Manufacturing Co.

Donald J. Wood

Donald J. Wood has been appointed sales manager of Titan Valve & Manufacturing Co., Cleveland, Ohio, manufacturers of water heater controls. Prior to his appointment at Titan, Mr. Wood was sales manager of Duval Engine Co. of Cleveland. A graduate mechanical engineer from the University of Michigan, he has also done graduate work at Case Institute in Cleveland.

Beaird to Construct New Plant in California

A new plant which will manufacture storage systems for L. P. gas and anhydrous ammonia fertilizer for distribution in eight mountain and Pacific states will be located in Stockton Calif., by the J. B. Beaird Co., Inc., of Shreveport, La., it has been announced by J. Pat Beaird, president.

The new plant will be built and operated by the J. B. Beaird Co., Inc., of California, a newly formed, wholly owned subsidiary of the Shreveport manufacturing company.

Charles T. Beaird, secretary of the Shreveport firm, has been named president of the new company. He has moved to Stockton, where he will supervise immediate construction of the new plant on a 13-acre site two miles south of the city.

Establishment of the new plant will enable the parent firm to extend its existing 30-state marketing area for LPG and anhydrous ammonia systems westward to include the eight mountain and Pacific states.

The plant will be constructed at a cost of approximately $200,000 and will contain the latest types of equipment, including modern automatic welding machines and special equipment for the new process developed by Beaird for dehydrating L. P. gas systems. Tanks ranging in size from

110-gal. to 1000-gal. capacity will be manufactured.

Five officials of the parent firm will serve as directors of the new California company. They are Charles T. Beaird, J. G. O'Brien, C. N. Wibker, Louis J. Sarosdy and J. L. Tullis. No officers, other than Charles T. Beaird, have been named for the California firm as yet.

LPG Credit Corp. Opens New Office

Announcement is made by the LPG Credit Corp., Cleveland, of the opening of a new branch office in Dallas, Texas. It will be located at 3409 Oak Lawn Ave., Suite 204.

This office will enable LPG Credit Corp. to maintain local contact with L. P. gas dealers and distributors in the Southwest in carrying on the financing of retail sales of LPG appliances, cylinders, tanks, bulk storage and delivery equipment. Faster, more efficient service will result, according to E. E. Bishton, vice president.

Making the new office their headquarters will be J. H. (Jimmie) Brown, district manager, and M. T. (Mac) Meharg, district manager for south Texas. Manager of the office will be Richard (Dick) Shockey.

In addition to its main office in Cleveland, LPG Credit Corp. also has a branch office in Atlanta, Ga., serving the Southeast.

Huge Underground Storage Opened in Louisiana

General Gas Corp., major distributor of liquefied petroleum gas, recently completed work on two huge underground storage caverns near Gibsland, La., and began filling them with 4 million gals. of L. P. gas purchased under favorable summer market conditions for retail sale during peak winter demand periods.

Company spokesmen said current plans call for the "bottled" fuel to remain in the new caverns hundreds of feet underground for from five to seven months, depending upon fall and winter refinery prices and the start of the winter heating season. They pointed out that both refinery and retail prices rise during cold weather months.

General Gas' giant subterranean storage vaults—hydraulically mined out of massive salt deposits at a fraction of the cost of aboveground steel storage tanks—will be enlarged next year to a combined capacity of 8 million gals.

Rawlston D. Phillips, president of the Baton Rouge firm, hailed the new storage facilities as "a miracle of geology," and said "they place our supply and future sales situation in a very favorable light for the years ahead."

He asserted that "through them our customers are assured of plentiful supplies of L. P. gas when they want and need them."

General Gas supplies "bottled gas" to thousands of residential, commercial and industrial customers throughout Louisiana and western Mississippi and also operates an export business to Latin America and the Carribean region.

Andrew Bauer

Andrew Bauer, sales manager of Century Gas Equipment Co., Lynwood, Calif., passed away in Long Beach late in June.

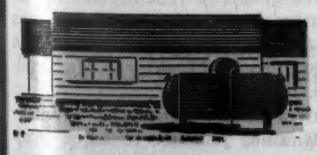
Mr. Bauer was born in Cincinnati, and was 62 years of age. He joined the staff of Century in 1934 as auditor, on a part time basis. In 1939 he took over the sales management.

Partners in Profit

Delta's workers know that a chain is only as strong as its weakest link. So they make sure all links are strong on their end of the Delta marketing line-up. They realize that good work, close inspection, and honest merchandise mean more money for everyone, all along the line. They are partners in profit with you.

This spirit of partnership is a vital part of every Delta Mix-O-Gas System, from the steel plate to the finished product at the customer's house. Everything within reason is done to help you sell Delta Mix-O-Gas Systems faster and easier. The Delta salesman in your area is a trained specialist in working with you on this partnership in profit. The Delta teamwork plan is constantly setting outstanding sales records.

For profits . . . . . let's be partners!



DELTA TANK MANUFACTURING CO. INC.

P. O. BOX 1469, BATON ROUGE, LA. • P. O. BOX 1091, MACON, GA. • P. O. BOX 431, JEFFERSONVILLE, IND.

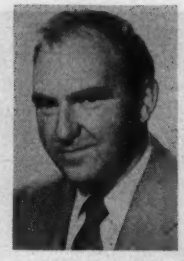
Export Office: Suite 110, International Trade Mart, New Orleans, U. S. A.

MANUFACTURERS OF LPG PRESSURE TANKS AND I. C. C. CYLINDERS

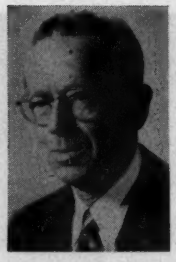
New Firm to Operate Bryant Industrial Division

Formation of the Bryant Industrial Products Corp. and its purchase of the principal assets and production facilities of the Bryant Industrial Division, Affiliated Gas Equipment, Inc., was announced recently by Robert M. Buck, president of the new Cleveland enterprise.

The new firm, to specialize in the design, production and marketing of industrial gas combustion equipment, will be located at 17700 Miles Ave., Cleveland. All key personnel of the former Affiliated Gas Equipment division will join in the new organization.



R. M. Buck



L. R. Foote

"Plans for the immediate future," said Mr. Buck, "include the expansion of present product lines and the development and introduction of several new lines, as well as broadened engineering and sales activities."

Officers of the new company, in addition to President Buck, are Lawrence R. Foote, vice president, and John Sellors, Jr., secretary-treasurer.

D. O. Tomlin

Dearborn Stove Co. Buys Odin Stove Mfg. Co.

The Dearborn Stove Co. of Dallas and Chicago, nationally known manufacturers of gas room heaters, has purchased the Odin Stove Manufacturing Co. of Erie, Penna. The announcement was made by D. O. Tomlin, Dearborn president.

The 55-year-old Erie company manufactures and sells a complete line of gas and electric ranges and clothes dryers. Facilities involved in the sale included the Odin factory having 84,000 sq. ft. of manufacturing space and executive offices in Erie. No purchase price was disclosed.

Earlier this year when Dearborn was purchased by a group of Dallas investors headed by C. A. Sammons, T. A. Rose and D. O. Tomlin, plans were announced for adding additional high quality home appliances to the well known Dearborn line of room heaters, evaporative coolers, gas water heaters and barbecue grilles. "The purchase of the Odin Stove Manufacturing Co. is our first major step in this planned expansion program," Mr. Tomlin said.

International Get-together For Fisher Governor Agents

Fisher Governor agents from all over the United States, Canada and Mexico gathered recently for an international sales meeting of L. P. gas regulator representatives at the Fisher office and factory in Marshalltown, Iowa.

New Fisher regulator developments, sales policies, research proj-

ects and regulator service clinics highlighted the three-day assembly. Kenneth R. D. Wolfe, Fisher vice president, was in charge of the conference.

Pyrofax Promotes Frost and Ackley

F. W. Frost

F. W. Frost has been appointed manager and J. A. Ackley, sales manager, of Pyrofax Gas Co., a Division of Union Carbide and Carbon Corp., W. A. Naumer, president of Pyrofax Gas Co. announced recently.

Mr. Frost joined the company in 1931 as a sales correspondent, and later became advertising manager and assistant sales manager. In January, 1950, he was appointed sales manager for the company.

Mr. Ackley joined the company in 1937 as credit and sales correspondent. He served successively as field service engineer; field representative for Iowa and southern Minnesota; and district field manager for Maryland, Delware, and northern Virginia. He was transferred to the New York office in May, 1949 and was appointed assistant sales manager in January, 1950.

Gas Fuel Course At Southern Tech

On the curriculum of Southern Tech, Chamblee, Ga., is a technical course in gas fuel, offered by the Institute's Gas Fuel Technology Department. The course has been in operation for four years, with the department graduating some 50 trained technicians for the gas industry.

Southern Technical Institute is a division of Georgia Institute of Technology, and grants an Associate of Science degree based on 18 months resident work. Official approval of the school has been announced by the Veterans Administration, and Korean veterans are eligible for VA benefits for training there.

An informative bulletin covering the course — facilities, cost, curriculum and scholarship program — is available by writing the Institute.

New General Manager for Canadian Palmer Stendel

Announcement has been made of the appointment of D. C. Langford as general manager of Canadian Palmer Stendel Oil Corp., Calgary, Alberta, by Brigadier C. D. McCarthy, president of the firm. Mr. Langford was formerly manager of the petroleum and natural gas division of the Canadian Bank of Commerce in Calgary.

Canadian Palmer Stendel recently acquired all the assets of Luna Gas Limited, and has received approval from the Alberta Petroleum and Natural Gas Conservation Board on its application regarding erection and operation of portable, packaged gas absorption plants to process wet gas for products including butane and propane.

Handbook of Accident Prevention Published by NSC

A 93-page Handbook of Accident Prevention for business and industry has been published by the National Safety Council especially for the manager of a small business or for those supervisors of single departments in larger organizations whose responsibilities are quite similar.

Slanted toward the business which

cannot afford to employ full-time safety specialists, the Handbook includes references to many organizations which offer a vast amount of help and information along the safety-in-industry line.

Effectively illustrated with photographs and sketches, the Handbook deals with the control of men, materials and processes—the facilities that cause accidents. The first chapter illustrates the simplicity of starting accident prevention work in any business. The remaining chapters discuss the conditions to be controlled for safe operation.

The Handbook is priced at $1.50 to members of the Council and $3.00 to non-members and may be purchased from the National Safety Council, 425 North Michigan Ave., Chicago, Ill.

John O. Campbell Jr. Heads Purchasing Section

Establishment of a Natural Gas and Gas Products Section in the crude oil purchasing department of the Carter Oil Co. ,to be headed by John O. Campbell, Jr., was announced recently by M. A. Wright, executive vice president. The new section will begin operation May 1.

Mr. Campbell has been general gasoline superintendent under Carter's production department since 1948. The new section will direct sales of the company's natural gas, natural gasoline and liquefied petroleum gases. Dan D. Averyt, who has handled natural gasoline and LPG sales, will continue in charge of these sales under the new section.

Mark Anton Nominated For New Jersey Senator

Mark Anton, a member of the Republican Clean Government group, and former freeholder of Essex County, has been nominated for New Jersey senator, to fill the vacancy resulting from the resignation of Senator Alfred C. Clapp. This opening was created when Senator Clapp accepted a judgeship in the superior court.

Mr. Anton is founder and president of the Suburban Propane Gas Corp., of Whippany, N. J., which this year will celebrate its 25th anniversary. Suburban, which started with *one customer*—Mrs. Mark Anton—is the largest independent distributor of propane, and now serves over 360,000 customers in a 16 state area which extends from Maine to South Carolina.

Dealer Promotion Kit Released By Delta

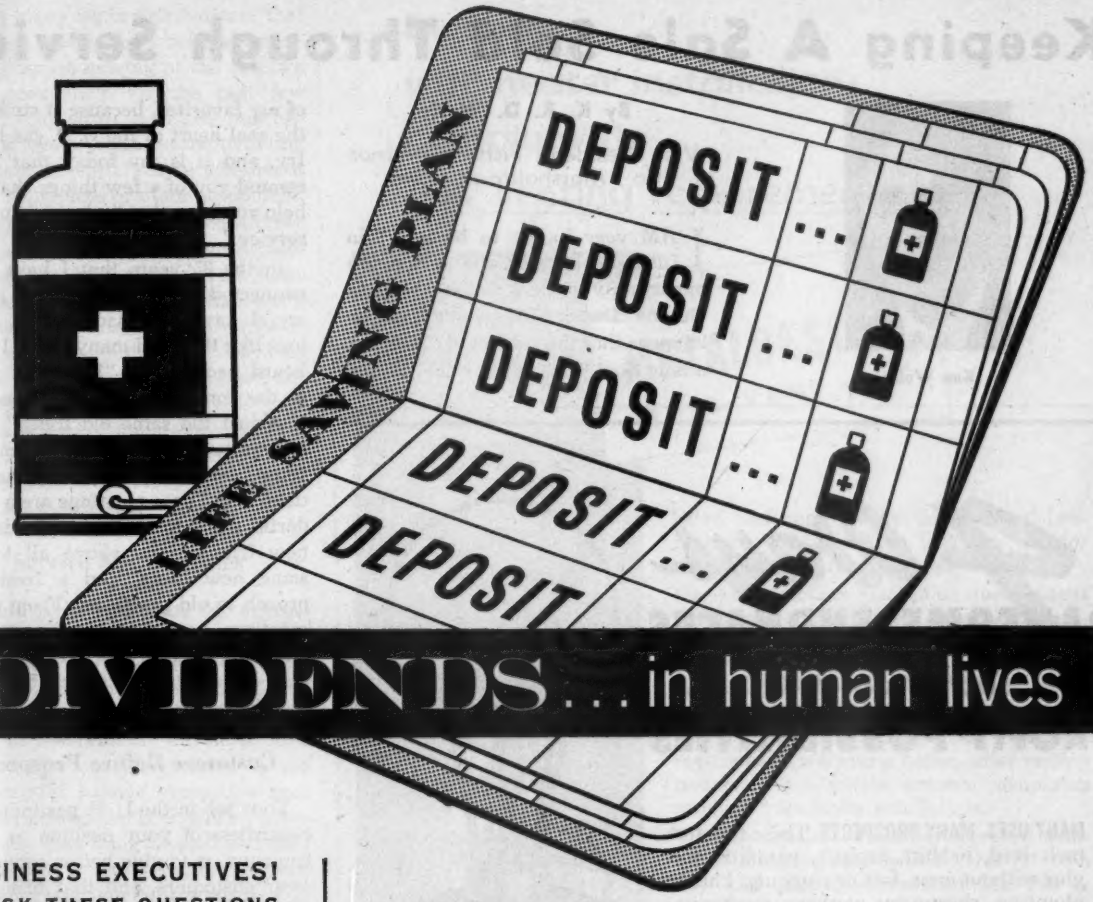
A special promotion kit for a "Fall Fill-Up Campaign" for L. P. gas dealers has just been produced by Delta Tank Manufacturing Co., Inc., Baton Rouge, La. Distribution in 27 states is now being made through mail and Delta's field representatives, J. E. Ketner, vice president in charge of sales, has announced.

"This kit contains the complete plan and necessary materials for any dealer to conduct a successful campaign to fill consumer storage systems before the winter ratio starts," Max Fetty, advertising and sales promotion director, explained.

Delta's Fall Fill-Up Campaign package offers its major aid to the dealer through emphasis of gas load sales rather than sales of systems.

Newspaper mats, radio copy, posters, direct mail pieces, etc., in the package tell the story to the consumer that "it's time to fill up before the winter rush starts," and offers "free inspection of your storage facilities and heating requirements as a public service."

Any dealer may receive a kit immediately by writing Mr. Fetty.



DIVIDENDS... in human lives

BUSINESS EXECUTIVES!
CHECK THESE QUESTIONS

If you can answer "yes" to most of them, you—and your company—are doing a needed job for the National Blood Program.

- ○ HAVE YOU GIVEN YOUR EMPLOYEES TIME OFF TO MAKE BLOOD DONATIONS?
- ○ HAS YOUR COMPANY GIVEN ANY RECOGNITION TO DONORS?
- ○ DO YOU HAVE A BLOOD DONOR HONOR ROLL IN YOUR COMPANY?
- ○ HAVE YOU ARRANGED TO HAVE A BLOOD-MOBILE MAKE REGULAR VISITS?
- ○ HAS YOUR MANAGEMENT ENDORSED THE LOCAL BLOOD DONOR PROGRAM?
- ○ HAVE YOU INFORMED EMPLOYEES OF YOUR COMPANY'S PLAN OF CO-OPERATION?
- ○ WAS THIS INFORMATION GIVEN THROUGH PLAN BULLETIN OR HOUSE MAGAZINE?
- ○ HAVE YOU CONDUCTED A DONOR PLEDGE CAMPAIGN IN YOUR COMPANY?
- ○ HAVE YOU SET UP A LIST OF VOLUNTEERS SO THAT EFFICIENT PLANS CAN BE MADE FOR SCHEDULING DONORS?

Remember, as long as a **single** pint of blood may mean the difference between life and death for **any** American . . . the need for blood is **urgent!**

NATIONAL BLOOD PROGRAM

America's blood bank needs **more** blood, **now.** Be a regular depositor and know that your dividend is saving a life of some American—somewhere.

It may be a soldier shot down in battle, suffering from **shock.** Or someone here at home, sick and in dire need of new blood to restore life. A mother in childbirth, or a child in an accident.

America must give. America is **you.** Won't you call your Red Cross, Armed Forces or Community Blood Donor Center right now, for an appointment?

GIVE BLOOD

...give it again and again

Keeping A Sale Sold Through Service

Ken Wolfe

By K. R. D. Wolfe

Vice President, Fisher Governor Co., Marshalltown, Iowa

I AM very happy to be here* in Little Rock today, and to have the opportunity to speak to the Arkansas Butane Dealers Association. It so happens that the subject of "Keeping a Sale Sold Through Service" is one of my favorites, because it strikes at the real heart of the L. P. gas industry, and it is my today that I can remind you of a few things that will help you keep that "sale sold through service."

In the 25 years that I have been connected with the L. P. gas industry, I have attended several meetings like this, and many times I have heard people say, "I am not going to the convention this year because it is just the same old thing." This convention is not "just the same old thing," and I don't think many of them are. These meetings are a wonderful place to meet old friends and new friends, and above all to get some new ideas, and a fresh approach to old problems. From these meetings you should get a greater understanding of your problems, and new knowledge by which to better perform your job.

Customer Before Prospect

Your job in the L. P. gas industry, regardless of your position in your company, is to give better service to your customers, and that brings us back to the title of this discussion of keeping a sale sold through service.

To me, it is more important to keep an established customer satisfied and happy than it is to sell a new customer, and there is a basic reason for that thought—a prospective customer, who has not actually been your customer, can do you no harm, but believe me, a customer who gets a bad deal or poor service from you can do plenty of damage with other prospective customers. Therefore, the time-worn saying, "The customer is always right," is still just about as true today as when it was uttered for the first time many years ago.

During the past 10 years, many young men have become successful salesmen without ever having had to come to grips with real, aggressive selling techniques. I do not believe that this type of selling is going to continue indefinitely, and, in fact, right at the present moment we are

*Delivered at the Arknsas Butane Dealers Association annual meeting in Little Rock.

seeing many signs that indicate that if we are to keep the wheels of American progress moving at the rate we have seen them for the past few years, real effort must be put forward in every organization involving sales, and it matters little whether it is gas appliances or other equipment.

Therefore, it is the responsibility of the older and experienced sales manager to lead and guide these younger men in the old, reliable selling methods. There are no doubt at least a hundred different ways in which to sell any one given item, but once a sale is made, there is only one sure way of maintaining a satisfied customer, and that is, they must obtain 100% satisfactory service from the item purchased.

Service Key To Sales

There is no substitute for aggressive selling, but the salesman, no matter how good or how experienced, cannot do the whole job alone. Every person in an organization is responsible to the ultimate customer to a degree equal to his position in the company. I believe every one here will admit that the L. P. gas industry has only one thing to sell, and that is service. It matters little to your customer how you deliver gas to him. He is indifferent to whether you use a 100-lb. or a 100-gal. tank or a 1000-gal. tank, just so long as the service your customer expects is readily available to him. Your customer, the housewife, doesn't care what trade brand you sell by, just so long as she can prepare her meals, heat her water, brood her chickens and do the many other tasks she has learned to depend on from L. P. gas, and she wants to do these things on time and without failure. Service, therefore, is the key to sales and more sales and still more sales.

Now let's examine this term "service." It may be prosaic to refer to our old friend, Webster, but he is still the only authority I know when it comes to the true meaning of words. Webster defines service as "performance of labor for the benefit of another—loosely, all of the auxiliary activities in the production and distribution of a product." Note the last part of that definition—"loosely, all of the auxiliary activities in the production and distribution of a product."

I return now to an earlier state-

ment and that is, "everyone in an organization is responsible to the customer to the degree of the importance of his job with his company."

I am sure that you have a fine trade show here with many fine exhibits of appliances, tanks and technical equipment, and that is all very essential. But, all of that equipment and all of those appliances will be of no value to maintain a customer who has been slighted by poor service. Many servicemen know exactly how to install a gas appliance, but overlook taking a few minutes of their time to explain to the housewife just why he is there and what he is doing. Your customer is no more suspicious than you are, so reverse your positions and see what you would think if someone came to your home and started to work on something outside of your house without telling you what he was doing.

Some Do's and Don't's

When you approach your customer's door to explain to her why you have come, announce your presence with a reasonable knock on the door and not one that will shake the windowpanes, and here is probably as good a time as any to mention that certainly a serviceman should never have started on a service job unless his personal clothing was clean, neat and presentable. Whether your servicemen are in uniform or ordinary clothes is incidental, as long as they are clean and neat. I think this is one of the greatest weaknesses that occurs in so many service departments, because the average housewife maintains a clean and neat kitchen. How can she expect clean, precise and dependable service from an organization which shows up for the first time in her kitchen and give an appearance that is not clean, neat, and alert? Therefore, when it comes to service, cleanliness is certainly next to godliness.

Now in most cases, the first sale of L. P. gas appliances to a customer is the kitchen range, and by properly installing the system and by completely educating the user in the proper utilization of the equipment, you automatically set up a new potential customer for additional gas appliances. In spite of the fact that this has been told to servicemen perhaps hundreds of thousands of times, this type of service is still one of the

weakest links in the entire gas industry.

It is no longer possible for a serviceman to be just a handy man with a wrench. He is a combination of a skilled mechanic, a salesman and a diplomat. He must be proud of his job and display a real interest in the product with which he works. It is up to the management to show the serviceman the importance of his position in the overall picture, and it is up to the serviceman to portray and extend this interest and goodwill to the customer.

Survey Your Service

If I were asked to make up a check list for a serviceman to study over at least once a week, I think I would start by giving management the first check, and for those of you here who have a part in management, I would suggest you make a careful survey into your own attitude toward service.

In making such a survey you must start with your own immediate desk, your office, your warehouse, your service department and every other part of your building and premises. Do all of these present a clean, well-lighted, freshly painted and up and coming attitude? Is your service department properly equipped with adequate tools, trucks and equipment? Do you insist upon good housekeeping with appliances properly stored, with trucking, walk ways and aisles having proper clearance? Is your automotive equipment in good repair and properly painted and cleaned? Do you insist that your servicemen maintain good housekeeping and correct care of equipment? Do you take the time to train a new employe as to his duties and responsibilities to your customers? Has your new employe been taught all of the things that go into making a satisfied customer? Have you made your servicemen understand the full importance of his job?

Every man, if given an opportunity and encouragement, will show pride in his job. It is not monotony alone that makes workers unhappy. It is loss of interest, loss of the feeling of satisfaction in accomplishment. For thousands of years, farmers have plowed furrow after furrow, and have done the same chores day after day. There is monotony—a sense of sameness—in such a life, but always

the farmer has known that his tasks are part of the work of raising a crop and his satisfaction will come through its harvest.

Management must make every job seem significant, in order that it may be satisfying. Millions of people earn their living by doing routine work, and there are good economic and human reasons why this is true, but there are no reasons why that work should not be dignified, significant and worth doing well. All workers want to be assured that someone in authority recognizes the importance of their work, and it is certainly important to give due credit when a job is well done. A pat on the back will help to maintain that enthusiasm which is so essential in any successful organization.

If you in management cannot answer yes to all of these questions, then it is you who are responsible for improper customer service, and not your serviceman, for it has been proven thousands of times that an organization is no better than its management, and certainly if your servicemen are not told of the type of service they are to give to the customer, you can't expect them to do it.

On the other hand, you who are directly on the firing line in the service department, if you haven't been told these basic fundamentals of service, then it is your opportunity to improve your entire organization by seeing to it that proper organization and proper service details are worked out to improve your customer relationships.

I know that some of you servicemen will take exception with me, because you believe that a perfect service job is being done by your organization. Now if you want to check this —because I certainly challenge it—I would suggest that you do as a friend of mine did in one of his eastern properties last year.

Method of Checking Service

This man asked that the sales department report to him the names and addresses of 100 customers at the time their first gas stove was installed. He arranged to send each one of these customers, 30 days after the installation was made, a letter requesting that the customer write him any details pertaining to the gas stove installation which could possibly improve his service to his future customers. He stated frankly that he was looking for any sort of criticism that might be in the customers mind. Out of the 100 letters written, naturally he didn't get complete replies, but he did get 43 useable and detailed letters, and here is the way they added up. Eighteen of his customers reported no complaints on the service, the equipment or the installation. That looked like a pretty fair record, but remember, this was less than 25% of the customers sold. In fact, it was exactly 18%.

Five ladies reported that the serviceman gave them absolutely no instructions on the use of the stove, and naturally, they experienced many troubles in reading instructions, burning food in the oven and other inconveniences.

Eight reported that the stove, when installed, was not properly cleaned, stickers were left on the stove surfaces, that there were grease smudges on it, and that the serviceman did

not remove and clean up properly the dirt and mess of making the installation.

Four housewives reported that the stove was not operating properly.

Two more customers were complaining because the cost of operation was too high. Apparently there was a leak in the system, because the customer had used more than 100 lbs. of gas in both cases, in less than 30 days.

Six more customers had requested that the serviceman return to the job, but had not yet appeared 30 days after the initial installation.

Now let's see what the record shows. We had 18% satisfied customers out of a known 100, and we had 25% either definitely dissatisfied or certainly not happy customers. I don't think I have to tell you that this particular operator got a pretty severe jolt from this survey, and as a result, he stopped all of his other activity and went into a very extensive servicing campaign and training of employes insofar as customer relations are concerned.

Guide To Happy Customers

If your customer relationships are no better than the one I have just mentioned, it means that possibly you have less than 50% perfectly happy and contented customers. I think one of the greatest ways to check on this matter of customer contentment is to have your delivery man, at least once every six months, make a personal visit with the housewife, to be sure that all gas appliances and equipment involved with the installation are operating in the manner as expected by the customer. I think if this one rule were followed by the entire industry, completely and without exception, it would be one of the greatest things that would lead to the sale of new appliances and additional gas load.

In conclusion, I would like to deviate just slightly from the true subject of this discussion, and I think it pertains more to service to ourselves. A couple of weeks ago I had the pleasure of attending the American Gas Association Distribution Conference in Chicago, where Mr. Oates, chairman of the board of the Peoples Light, Gas and Coke Co., gave a very inspirational talk on conditions of today. Now, a great many people have been talking quietly, or thinking, or

possibly even speaking out loud, that surely present high plateau of American business could not continue, and that certainly we must be headed for a depression, or at least a recession.

Mr. Oates dwelled a great deal on the fact that this situation is absolutely unnecessary, and I for one would like to urge all of you that if you have been bothered with that type of thinking, that you cleanse your mind of it and think of the new and unexplored avenues that still lie before us. In a news bulletin that I just picked up before leaving the office there were a few brief notes pertaining to the L. P. gas industry. One was that the consumption of LPG for power purposes alone may hit 200 million gals. in the Great Plains area of Texas in 1953. This is not only a tremendous market, but also a very essential load balancer. Another one —32 million automatic washing machines are now in the hands of users, and each one is a prospect for a gas-fired LPG clothes dryer. Increased underground storage—an estimated 8 million bbls. either completed or in the planning stage, enough for almost 30 days of normal production, and another statement that the L. P. gas industry has increased its field sales 36% a year and boosted its customers up to nearly 9 million. It's the most phenomenal industry in the United States today except for television.

America stands on the threshold of the greatest prosperity in its history—not on the threshold of recession.

General Gas Acquires Propane Corporation

General Gas Corp. recently announced acquisition of all outstanding common stock of the Propane Corp., whose five Louisiana distribution centers sell approximately 1 million gals. of liquefied petroleum gas annually.

General Gas currently operates 57 L. P. gas bulk plants and sales offices throughout Louisiana and western Mississippi. Headquarters are in Baton Rouge.

LPG Prospect List New Industry Service

A new service to the industry—an L. P. gas prospect list—has been inaugurated by the National Committee for LP-Gas Promotion, and the first issue has been made available to contributing members of its program.

The 24-page, mimeographed list of prospects for L. P. gas, L. P. gas appliances and equipment was gleaned from leads developed by the LP-Gas Information Service through program advertising and publicity. Names were also taken from requests for specific information on L. P. gas uses or installations.

A supplementary feature of the list is an advance report on contemplated motel and tourist court construction and modernization projects. Divided by state and town for easy reference, the prospect service is a product of the promotional program sponsored by LPGA, GAMA and NGAA. Plans for the list were worked out by a special subcommittee headed by Leo J. Wilmeth, Shamrock Oil and Gas Corp., Amarillo, Texas.

Price and delivery information can be obtained from the National Committee for LP-Gas Promotion, 11 S. La Salle St., Chicago 3, Ill.

Management and Finance

By E. V. Reichstetter
District Manager
Dun & Bradstreet
Denver, Colorado

THE remarkable growth in the retail liquefied petroleum gas industry is well known. According to Department of Interior figures, sales of L. P. gas alone have increased over 20% yearly with one exception since 1945. But I will admit that it came as a surprise to me when I learned from your Mountain States secretary, J. C. Crawford, that this growth has been second only to the television industry.

Survey of 40 Businesses

Mr. Crawford said that the industry has developed almost entirely since the war and that probably its area of greatest need is in financial and credit management. In order to adequately study the problem, a list of members of your Wyoming association was submitted, from which a sampling of 40 cases has provided material for my talk today.

It was interesting to learn from the Dun & Bradstreet reports on these 40 businesses that the members of your local association have shared in good measure in the industry gains. Of this number all but one have shown regular, and in many cases outstanding, sales gains and profitable operations in the recent years covered by financial statements included in our reports. This record is one that few, if any other, fields could equal.

The over-all picture is best described by the grade of credit appraisal ratings. There were 11 first, 15 second, 8 third, and 6 fourth grade ratings. The number of first grade ratings is well above average and reflects, in large part, the industry's growth and profits earned. On the other hand, the high percentage of third and fourth grade ratings in the face of such favorable conditions sug-

*Presented at the Wyoming LPGA annual convention held recently at Casper.

gests a need for analysis of the problems peculiar to your field.

The financial statements of the test group disclosed three points which contribute heavily to an unbalanced internal condition: 1. Heavy Fixed Assets. 2. Large Inventories. 3. Slow Accounts Receivable. There are many businesses whose operations require heavier investment than an over-all business average in one or two of these directions, but few others by the very nature of their operations find such heavy investments in all three.

Heavy Fixed Assets

The average L. P. gas dealer has a truck or trucks, tanks, cylinders, the usual store and office furniture and fixtures, tools, and other fixed assets, sometimes including real estate. There are certainly minimum fixed asset requirements, and the closer to those requirements fixed assets investment is held, the more working capital is available to carry the burdensome load of inventory and receivables. The reports indicated that in most instances adequate control has been exercised in maintaining a proper relationship between fixed assets and tangible net worth. This is in line with sound management policy, and is a consideration well worth keeping constantly in mind. However, some of the balance sheets reflected total fixed assets equal or larger than total capital investment in the business. Such a condition automatically shifts the burden of financing operations to outside quarters.

The study mentioned in this talk which was made before the Wyoming LPG Association convention in Casper was based on information in Dun & Bradstreet reports on a representative sampling of member dealers. M. L. Trotter, president of LPGA, attended the convention, heard the talk, and expressed the opinion that the problems outlined were not exclusively local and that the recommendations would apply nationally. He felt that a sampling of dealers throughout the country would disclose the same general conditions as outlined by Mr. Reichstetter.

Large Inventories

The greatest single problem of merchandising businesses today is heavy inventory, which raises the question of losses resulting largely from obsolescence through changing consumer tastes and new models and industry price reductions. Often stock is not well balanced. A good example of this condition is the television industry in our area, particularly in view of the close parallel in its growth pattern to your own. In July of 1952 the TV freeze was lifted, and wholesale and retail outlets sprang up overnight in our Mountain States district. The industry confidently predicted that it could not supply the demand. Distributors and dealers felt that their major problem in the foreseeable future was one of buying, and their purchasing habits reflected this feeling.

Contrary to their predictions, television sets became easily available within a few months, and price competition started. In less than a year the careful buyer could find sets priced under wholesale, resulting mostly from model changes, slower moving models, and often price

"deals" by the manufacturer, which in many cases has forced both distributor and retailer to sell under cost.

To a concern whose financial condition is marginal, losses on inventory can easily result in discontinuance or failure. When selling conditions are poor, a low inventory can reduce losses and place the business in a far better competitive position. When a seller's market prevails, rapid turnover is a definite aid in maintaining a healthy condition and in carrying a heavier load of receivables.

Two guides to inventory control are (1) the ratio of net sales to average or closing inventory and (2) inventory to net working capital. The first ratio is not strictly inventory turnover (which should be based on Cost of Sales), but it is a guide used in our business and generally used as a "rule of thumb" by businessmen.

Standards of Turnover

Our table of seven lines of retailing show a range of turnover on a five-year average ranging from a low of 3.9 times in the men's and boys' clothing to a high of 7.9 times in women's specialty shops. These are standards of turnover which vary widely with each line of business, but it would be difficult to establish any pattern for your industry from the cases studied, which showed the following:

Number of Concerns	Net Sales to Inventory
15	1 to 3 times
11	4 times
8	6 times
6	12 times

The second guide—inventory to net working capital—might throw some light on the inventory question. Under usual circumstances, inventory should not be allowed to exceed Net Working Capital, yet this was the situation in 18 of the 40 cases studied. Your industry has been one of growing sales. As volume increases, it is generally necessary to increase turnover through closer and more careful buying in order to hold inventory under net working capital—regarded as necessary by business analysts. In other words, if sales increase 50%, it is seldom that retained earnings and adjustments in financial structure enable a firm to increase inventory the same percentage and

still hold a satisfactory relationship between inventory and net working capital. Generally speaking, greater volume must be handled on a proportionately smaller inventory.

The reason for this is that any drop in wholesale values, say 10, 20, or 30%, which has been the case in several lines even in recent years, would possibly be accompanied by decreases in sales. With heavy inventory, out of line with net working capital, and purchase commitments outstanding, the dealer could be in the unenviable position of facing increasing inventories on declining sales and falling prices. To the concern with other than a healthy financial condition, the question of survival could well present itself at such a time.

The 40 reports show nearly half with inventories in excess of net working capital and 15 having turnover of three times or less per year, or less than slowest turnover in any of the seven lines of retailing on which full information is available. If this should be representative of the industry, it would definitely suggest the need in the L. P. gas field for greater consideration of the inventory problem and closer control in the line with policies found sound in other longer established fields of retailing with greater experience under all competitive conditions.

Slow Accounts Receivable

The third problem, accounts receivable, is probably equal to that of inventory. The average collection period of accounts receivable in the retail trade of a November 30th study in 1952 was 32.6 days in the Denver area and 33.5 days nationally. Yet accounts receivable covering sales on net 30-day terms of the 40 cases studied showed the following number of months receivables on the books:

Months Receivables on Books	Number of Concerns
1	6
2	18
3	12
4	2
5	1
6	1

It is apparent from these figures that little information is obtained as to credit risk before the sale is made. Further, that little in the way of aggressive collection follow-up is practiced, notwithstanding the fact that all of the concerns were selling well over half of their total volume on these net 30-day terms. In my discussions with people in your industry in regard to receivables, seasonal or harvest terms have often come up. For this reason, it was interesting to me to learn that none of the 40 provided for such arrangements. This situation seems to arise not from terms at the time of sale, but rather to the form of settlement of past due accounts.

In our drive for net profits, it is a natural thing to be primarily concerned with sales and maintaining the best possible customer relations; often I find management working against itself in this respect. My own work is as much involved in sales promotion as it is in credits, and I am certain that the institution of a closer credit and collection policy will result in equal or better sales, and certainly greater profits.

First, adequate information from the reporting services and other sources will enable you to avoid or eliminate the bad accounts which no one wants and which lead directly to losses. Second, close collection follow-up on the marginal accounts sold is something the customer usually expects and in few cases actually resents. Poor collection policy often results in lost sales and is probably unfair to the customer, because it adds to his problems rather than helping him. At the time of sale, an agreement is reached on payments within net 30-day terms, and the seller has every reason to expect to receive his money on this basis. In most cases, the customer is able to scrape up the money somehow even if his natural tendency and the easiest way out at the moment is to let payment lag. Additional purchases are made. The account continues to grow, each week and each month becoming far more difficult for the customer to pay, and often a point arrives where it becomes impossible. It then becomes necessary for the seller to take action and "get tough." Usually the embarrassment of the situation results in the customer moving elsewhere for his purchases if possible, which would not be the case if the collection had been made on a current basis when payment could be obtained with far less difficulty for the customer.

Pattern For Borrowing

By bringing in money on accounts receivable on a basis closer to the average in the retail field, a more sound financial position will obviously be maintained. From a net profit standpoint, earnings would also be affected by reduced borrowing and consequently less interest payments. That this, together with heavy fixed assets and large inventories, is a factor, is indicated by the fact that 28 of the 40 were borrowing on a fairly steady basis over the year, and several of the others occasionally borrowed for seasonal requirements.

Industry Studies

While it is my opinion that the points I have already brought out are the most pressing, as a further recommendation I would like to suggest that industry studies, which are available in other lines, be made in order to determine a pattern in your line. These would be an invaluable aid to the dealer for a thorough analysis of the condition of his business in comparison with others in the same line and facing the same general prob-

lems. The following 14 most important ratios should certainly be included in such a project:

1. **Current Assets to Current Debt**
2. **Net Profits on Net Sales**
3. **Net Profits on Tangible Net Worth**
4. **Net Profits on Net Working Capital**
5. **Net Sales to Tangible Net Worth**
6. **Net Sales to Net Working Capital**
7. **Average Collection Period**
8. **Net Sales to Inventory**
9. **Fixed Assets to Tangible Net Worth**
10. **Current Debt to Tangible Net Worth**
11. **Total Debt to Tangible Net Worth**
12. **Inventory to Net Working Capital**
13. **Current Debt to Inventory**
14. **Funded Debts to Net Working Capital**

Breakdown on Percentage Basis

In addition, the following information should be obtained on a percentage basis, broken down according to (a) rate of net profit earned; (b) form of organization—proprietorship, partnership, or corporation; (c) sales volume; (d) credit policy; and (e) size of city:

Net Sales
Cost of Goods Sold
Gross Margin
Expenses—Owner's Compensation
Employes' Wages
Occupancy Expense
Advertising
Bad Debt Losses
Buying Expense
Depreciation
All Other Expense
Total Expense
Net Profit Before Income Taxes

Your industry is a relatively new one, and it is impossible to have the sales and profit growth you have experienced without accompanying growing pains. The trend is still good, but the time has arrived to give serious thought to a competitive period ahead. Those concerns whose management realizes the necessity for positive action in the direction of sound financial and credit policies will be the ones that weather the storms that every business must face over the years. And, it is my firm opinion that the benefits will show immediately as sound management policies will always be the most profitable, year in and year out, in boom times as well as recessions.

Safety in the Planning of LPG Distribution

By L. C. Rohret

Middle West Service Co.
Chicago, Illinois

THE specific problem in safety being considered here* is "Safety in Design and Construction of New L. P. Gas Distribution Facilities." This is a very broad subject, and space permits only a brief treatment of it.

Safety is something which concerns all persons, individually and collectively. It is something which affects their lives from the time of birth until the time of their passing. It is something everyone practices every moment of his life, and when one stops to think about it, the average individual is doing a pretty good job.

A Personal Responsibility

Safety is a personal responsibility resting upon every individual, and it is not something which can be placed upon a production line basis. A successful safety program cannot be conducted by posting a few placard or making a few safety speeches. Safety must be taught, and it is best taught by the foreman in the field who lives with the men, sees their mistakes and is in a position to point out and teach them the proper methods.

In all activities there are elements of danger which we accept as the normal hazards of living. At what point do these cease to be normal and become excessive? How many of them can we eliminate and how far can we go towards eliminating them? Ask this question of any hundred men and you will receive a hundred different answers.

The next question is: how far should the gas industry go to eliminate accidents? The industry should make the decision and get into action before it becomes necessary for someone else to make the decision for them. They can use their own experience as well as the experience of industrial commissions and others to help them formulate their policies and put them into effect. Some gas men are critical of all suggestions, and take the position of a man waiting for the perfect plan; others plunge ahead developing elaborate programs where a simple program, perhaps not so complete, would accomplish more.

Where should a safety program start? Does it make any difference? An old Chinese proverb says, "The longest journey starts with a single step." Take that first step, then the second and third, for any steps taken to increase safety are worthwhile and are that much closer to the ultimate goal.

It was unfortunate so many accidents occurred when L. P.-air gas was introduced into old distribution systems with relatively small leakage while distributing manufactured gas, but which developed excessive leakage when the L. P.-air gas absorbed the tars and oils which were sealing the leaks. Following this there was a loss of confidence on the part of the public and an increase in insurance rates.

The result of these and other gas accidents has been to focus attention upon the problem of safer design and construction in distribution systems.

Plant Design Important

The starting point of L. P.-air gas is the plant. Plant design should consider all safety measures as are consistent with good operation. It is not within the scope of this paper to design a plant, but merely to indicate several points that should be taken into consideration in the design.

The design and operation of the plant should be such as to prevent the escape of large quantities of L. P. gas in the event of malfunctioning of the equipment, and should also eliminate the possibility of in-

*Presented at the utilities section meeting, LPGA annual convention, Chicago.

troducing excess air into the system. The means used to accomplish this will depend upon the ingenuity of the designer and the equipment he has available for inclusion in the plant design. The design prepared should be checked carefully to make sure all of the desirable features are incorporated into them.

The actual plant construction does not involve the general public to any great extent, and good construction practices will cover most contingencies. A thorough check and test should be made of all equipment, LPG lines and gas lines for tightness and proper operation before being charged with gas. It is poor economy to neglect any feature of the plant affecting its safety.

The underground portion of a gas system, the distribution system which the public seldom sees, has a great bearing upon public safety.

The purpose of the distribution system is to contain and control the gas enroute from the plant to the consumer. The distribution system should be so designed as to permit growth and increased loads without the necessity of rebuilding or replacing mains once buried. This requires careful study as to the size of mains and, of even more importance, a consideration of how they will fit into the ultimate development. This does not mean laying excessively large mains, because pressure feeders may be built to feed into the system through regulators located at key points at such time as the growing load warrants them.

Construction of Mains

The type of material used in the mains is not too important, nor are the type of joints used for low and intermediate gas pressures. The important thing is to make sure the system is gas tight and will remain so. Today the trend is toward wrapped steel pipe with welded joints. This is an excellent type of construction, but its success depends upon the care with which the welds are made and the care used to assure a tight pipe coating, for a holiday in the pipe coating serves to concentrate the corrosion at that point.

Ordinarily, cast iron pipe is not coated or wrapped when used for gas distribution. The type of joints selected may be lead, cement or mechanical. Each engineer has his own ideas, gained from his own experience in similar situations, as to which will serve the local conditions best. As long as the work is properly executed and the joints remain tight, the purpose has been accomplished.

Escaping Gas Hazardous

Gas contained in the main and under control presents no hazards to the public. It is the gas which escapes that creates the hazards. This is true whether the gas in manufactured, natural or L. P.-air gas. All gases have two characteristics in common, that of being highly explosive when mixed with certain proportions of air, and that of being asphyxiating. In addition, many of the manufactured gases are toxic to a greater or lesser degree, depending largely upon the amount of carbon monoxide present.

Natural and manufactured gases, being lighter than air, tend to rise and dissipate rather quickly. On the other hand, L. P.-air gas, being heavier than air, tends to settle toward the ground, forming gas pockets in low spots and depressions. L. P.-air gas will dissipate in time, but this action is very slow where the air is static, as in a cellar or areaway where there is little or no air movement to sweep the area clear. For this reason special care should be exercised to prevent the escape of the gas, and additional vigilance is required to detect leaks and eliminate them before they can develop a dangerous concentration which might be ignited by a spark.

Any gases escaping underground will follow the paths of least resistance, and if the surface should be pavement or compact soil, they may travel long distances before finding an outlet. These outlets may be sewers, manholes, vaults or basements, as well as less compact surface soils where the gases may escape harmlessly to the open air.

When gas finds its way into a basement there is always the possibility of its being ignited by the operation of a light switch, a pilot light on a water heater or on a space heating unit. When present in sewers, manholes or vaults, there is always the danger of accidental ignition by a carelessly thrown match, an automobile exhaust, or an accidental spark. In addition to this there is the danger of asphyxiation for anyone en-

tering a contaminated area.

These things are being pointed out to emphasize the necessity for good design and construction which will continue to contain and control the gases through the years.

Good design must provide against mechanical failure and corrosion, and the means of providing such protection should give consideration to the following elements.

Mechanical Failure of Mains and Services

The more common causes of mechanical failures of mains and services are building settlement, soil settlement, soil movements caused by frost, heavy traffic conditions, mechanical damage caused by excavating machinery, and many other causes, including the twisting off of a service, driving a test bar through the pipe, traffic accidents and the like.

There is no real protection against building settlement. It is a situation which exists and which must be accepted. Attempts to mitigate the danger by the use of sleeves and other devices too often provided a path for gas to find its way into a building in the event of a leak in the area. Sealing the service tightly into the wall prevents such seepage but increases the possibility of a broken service outside the wall.

Soil settlement may fracture mains or services if an adjacent section of the pipe is located on firm soil which will not give. This condition may exist where the pipe leaves a rock trench and enters marshy or loose soil. Protection against this may be secured by sloping the rock excavation to an additional foot of depth at the point where the pipe leaves the rock excavation. This portion of the trench is then backfilled to the normal depth with good soil. The good soil will provide a cushion for the pipe through the transition.

The best protection from frost and heavy traffic conditions is to bury the pipe below frost line and deep enough to be protected against the shock of heavy traffic. In certain locations such as under railroads and state highways, sleeves and casings are required which protect the mains, although they are not practical for general use.

The only protection against damage caused by excavating machinery is a close working arrangement with

the city, the water company, the telephone company and the contractors, whereby the mains and services along the line of excavation may be located and flagged before the excavating is started. With the location of mains and services well marked, proper precautions against damage may be taken as the excavation approaches such mains and services. Constant vigilance is necessary to see that excavation work is not carried on without proper protection for the distribution system. This is not difficult in cities where excavation and building permits are required.

There seems to be no practical means of protection against a plumber twisting off a service, the driving of a test bar through a main, traffic accidents and the like. Having them reported immediately and having them repaired quickly is about the best that can be done at this stage of development.

Corrosion

Another source of danger is corrosion. Most of the corrosion of mains and services is due to electrolytic action. This is caused by dissimilar metals, in the presence of an electrolyte, setting up an electric current which destroys the pipe. Coating the pipe gives a great measure of protection and prolongs the overall life of the system substantially. As this discussion approaches the problem from the safety angle, it is evident that a single holiday or void in the pipe coating may permit a concentrated attack at that point. This may produce a leak as dangerous as if the corrosion were general. The best protection against this type of pipe destruction is known as cathodic protection. This consists of the use of an anode from which a direct current will flow through the ground to the system being protected. The potential required to cause the flow of this current may be self-generated, as in the case of the magnesium anode, or may be supplied from an outside source as is necessary when a scrap iron sacrificial anode is used.

The application of cathodic protection to pipe lines and isolated distribution systems is simple, but it becomes increasingly complicated in areas containing sewers, water lines, telephone cables and other underground structures. Its value has been proven beyond doubt, and even though the protection may not be

complete, the limited protection supplied will appreciably reduce the number of leaks and add years to the life of the system.

Standards for the design of regulator stations and the installation of regulators will be merely mentioned, for this subject is under intensive study by many groups in cooperation with each other, for the purpose of establishing standards for the industry. Until these standards are determined and adopted, any safety device installed or any design selected which will increase safety is a step in the right direction.

Preventing Overpressures

L. P.-air gas is not ordinarily distributed or transmitted at pressures above the utilization pressure, but as this sometimes does occur, it is within the scope of this paper to give consideration to the methods used to prevent overpressures on the meters and houselines.

There are four methods which may be used: pressure relief to the atmosphere, dissipation in the main system, automatic cut-offs, and overriding regulators.

The first method, relief to the atmosphere, may be secured by individual reliefs placed on each installation or by a single relief placed on the main at the point where the overpressuring might occur. These reliefs may be in the form of relief valves, mercury seals or oil seals. Mercury seals and oil seals are positive in action, but many times they will not restore themselves when the emergency is over, due to the loss of mercury or oil. An oil seal blowing can be a pretty messy proposition if it sprays oil around the adjacent area.

The disposition of the relieved gas is not too much of a problem when individual service reliefs are used. The gas is merely vented to the atmosphere at a point high enough as not to become a hazard. As the quantity is relatively small for the individual regulator, the release and dissipation of this gas is not serious. In the case of a single distribution system relief, the disposition of large quantities of gas becomes a serious matter. The relief vent, unsightly at best, must be carried high enough into the air to dispose of a large quantity of gas without danger. The venting of large quantities of gas in

a congested area is a potential danger and this method should be given careful thought before being adopted.

Dissipation

The second method—dissipation within the main system—is probably the least desirable method of controlling overpressure. To use this method, two conditions must exist: first, the main system must be adequate to carry away the excess gas, and second, the minimum gas demand must be greater than the maximum amount of gas which could flow through the faulty regulator.

Using Automatic Valves

The third method uses automatic valves to cut off the gas supply in the event of overpressure. These cut-offs may be located on the individual installations or may be located on the main system itself. The operation of such devices interrupts service and creates the problem of restoring service after the trouble is corrected. This is a small matter in the case of individual cut-offs, but becomes a project should service be interrupted in a large area.

The matter of back-feed from other regulators must be taken into consideration, as gas feeding back from other districts will recharge the lines, with the possibility of gas flowing unrestricted into the homes until the meters in the affected district can be turned off. Where tenants are absent, forcible entry must be made to cut off the meter and make sure everything is safe before restoring service in the area. The safest way to restore service in the area is to cut off every meter as quickly as possible, and after gas is restored to the main, restore the service on the premises.

While the preceding is an operating matter, it should be taken into consideration in the selection of a design for the prevention of overpressures.

Overriding Regulators

The fourth method provides overriding regulators which will pick up the control in the event of the failure of the district regulator. There are four basic arrangements of overriding regulator installations from which to select, all of which will provide the additional protection re-

quired without interrupting service. The customer never becomes aware of any trouble.

Combinations of these methods and arrangements may be developed to meet special conditions or requirements. The details of these arrangements will rest with the designing engineer who may wish to add alarms or telemetering equipment. There is no objection to any such devices as long as they do not interfere with the proper functioning of the regulators.

All mechanical control equipment requires periodic testing, inspecting and maintenance, and design and arrangement of such equipment should be such as to make the testing and inspecting as simple an operation as possible.

Safety In Construction

Safety during the construction period must not be overlooked. Sufficient barricades, flags, signs, flares, torches and lanterns to properly safeguard the project should be provided before actual construction work is started. The minimum requirement for such protection is often set by city ordinance, and the ordinances should be reviewed to determine the conditions under which the city permits such work.

The stringing of pipe along the streets too far in advance of the work is to be avoided, and thorough cleaning up immediately following the work is most important. Where temporary connections are made or additional work remains to be done at some point, it is more desirable to close these holes and reopen them when the need arises. The smaller the area to which the work is confined, consistent with good construction practices, the better. Streets and driveways should be reopened to normal use as quickly as possible, in the public interest and in the interest of safety. Clean work, a minimum of inconvenience and a reasonable explanation as to why the work is being done will elicit cooperation and good will from the general public.

Proper Equipment

Equipment of the proper type and size for the work intended and proper tools in good condition should be supplied. A sufficient number of men should be provided to do the work

without endangering any of them for the lack of manpower.

In the execution of the work, safe practices, consistent with this type of work, should be followed. It is axiomatic that a clean job is a safe job, so avoid the scattering of tools and materials, park tractors, trucks and equipment close to and parallel with the curb. In addition to the usual procedures, special precautions should be taken when purging the lines to prevent the accumulation of explosive mixtures in the pits and trenches. Blowers should be used to clean out gas pockets if natural ventilation fails to accomplish the purpose.

It is good practice to brief the construction crews on safe practices before they start work, pointing out the particular hazards in connection with the work and instructing them in the proper methods of safeguarding against accidents. The foremen should point out to the men that through faulty construction practices, they can endanger the lives of future generations. They should also be briefed on the subject of what to do in an emergency.

Safety Has a Price

Safe design and safe construction practices, where not covered by regulations, ordinances or laws, require a full knowledge of all local conditions, a knowledge of the materials available, a knowledge of the suitability of the materials, a thorough knowledge of the better installation techniques, and the use of sound judgment in interpreting this knowledge into a design which is economically sound.

Safety must be paid for. It may demand an expenditure of time and labor, or an expenditure of money. Whatever its cost, it is well worthwhile if it saves one life, prevents one accident or creates a feeling of good will on the part of the general public.

★ ★

Men who enjoy peace of mind on their jobs are divided into two classifications—the very safe, and the very dangerous. One knows that he is safe—the other does not even think about it. But the greatest difference is that the safe men can go right on enjoying peace of mind.

First LPG Plant Opens In Council Bluffs, Iowa

The first distribution plant for LPG in Council Bluffs, Iowa, the Ford Propane Gas and Supply Co., was formally opened recently by its owner, Harold Ford, and will handle a complete line of appliances and conversion equipment.

The new firm combines office and showroom in a quonset type warehouse building. Complete high pressure equipment for handling and storing the propane gas is located on the company site. Equipment also includes complete country delivery units.

Mobile Dental Unit Uses LPG For Heat

A dental office that goes to its patients is one of the latest and most unusual applications of LPG.

Initiated by the U. S. Air Force to facilitate dental aid for men in remote outposts, the mobile dental unit uses propane for heat and is equipped to produce its own electricity, air conditioning and hot water.

The 32-ft. trailer-unit contains a complete two-chair office, a dental laboratory and complete gear for X-raying. The unit lab is equipped for the development of X-ray plates, and for processing a wide variety of materials for plate-making.

Propane Recovery Increased 76% At Snyder, Texas Plant

The installation of additional processing facilities to increase propane recovery at the Snyder gasoline plant operated by Sunray Oil Corp. has been announced by the Snyder plant advisory committee.

An additional absorber and other equipment which will increase propane recovery to 76% while handling 75 million cubic feet of natural gas per day will be installed. Initial design of the plant called for 70% propane recovery while handling 50 million cubic feet of gas per day. The increase in gas volume to the plant since operations were begun has made the new facilities desirable. Estimates indicate that at 75 million cubic feet of throughput, the Snyder plant will produce an additional 100,000 gallons per day of propane. When the new installation is completed on this basis of throughput, the plant's total liquid production should be approximately 625,000 gallons per day.

Ohio Injector Acquires H. K. Porter Co.

Acquisition of the extensive lubricated plug valve business of the H. K. Porter Co., Inc., in Tulsa, Okla., has been announced by the Ohio Injector Co., Wadsworth, Ohio.

The semi-steel and steel valve production equipment of the Porter Co., formerly the Hinderliter Tool Co., will be moved to the Wadsworth, Ohio plant of Ohio Injector Co. next month.

As a result of careful pre-planning, the transfer of the equipment will be almost immediate, permitting production of the new line promptly. No lag will occur in the flow of the new products to the distributors, Ohio Injector added. The new line of products will be handled through Ohio Injector's present nationwide network of distributorships.

Long known as one of the oldest and largest valve manufacturers in the U. S., Ohio Injector's new activity will round out one of the most complete lines in the industry today. This new productive capacity and their ability to offer a complete line of quality valves engineered with skill and packed with years of experience represents another important step in the growth of Ohio Injector.

Garretson Co. to Handle National Distribution

The Garretson Equipment Co., Inc., of Mt. Pleasant, Iowa, and Si G. Darling, of Pratt, Kan., have jointly announced that the national distribution of the Garretson system of LPG carburetion will be exclusively handled by the Garretson Equipment Co., Inc.

Mr. Darling, the announcement states, wil continue regional distribution of Garretson equipment in Nebraska, Kansas and Oklahoma. The other regional distributors will remain the same, as previously announced, and additional state distributors are being established by the Garretson Equipment Co., Inc.

Louisiana LPG Firm Holds Formal Opening

The formal opening of Reed Gas, Inc., Eunice, La., was held recently with a large number in attendance. The new firm will distribute LPG for farm, home and industrial use, in addition to a line of home and auto appliances.

Reed Gas, Inc. is owned by L. M. Reed and Clinton Mornhinveg.

Arapahoe Gas Co. Opens New Plant at Boulder, Colo.

Arapahoe Gas Co. opened a handsome new appliance store and bulk plant on June 26 and 27, at 6000 North Broadway, on the northern outskirts of Boulder, Colo. Customers and friends flocked to the store to examine the large line of gas appliances on display, and to participate in the prize drawings which were held every hour.

The store building is of modern design, with a front of native "fiesta stone". The 2200 square feet of floor space include the display room, offices, store room, and service shops. Ample parking space for customers' vehicles and the company fleet, as well as storage for tanks and equipment, are provided on the 10 acre tract.

Storage facilities for well over 22,000 gallons of fuel is provided by 22 Eaton standard domestic type tanks manifolded together. Provision has been made for further expansion at any time. If the need arises, a tank can easily be pulled from the line for customer use. The storage plant, compressor house, and bottle filling plant are located at the rear of the tract. A propane filling station to service trucks, transports, and tractors is being built on the street front.

In addition to the Boulder plant, Arapahoe Gas operates an appliance store and an 18,000 gal. bulk plant at Lyons, Colo. Officers of the company are J. Robert Hamm, president; John Reiss, vice president; Frank Sikora, secretary; John G. Taussig, treasurer.

Southern Heater Co. Acquires New Line

The Ohio Foundry & Manufacturing Co., Steubenville, Ohio, announces the appointment of Southern Heater, Inc., as distributor for its Brilliant Fire line of gas heaters in the Memphis, Tenn., territory. The distributorship is effective immediately.

With the Memphis appointment, Southern Heater now represents the Brilliant Fire line in all or portions of 5 states with resident representatives located at Jackson, Miss., Lake Charles, La., Little Rock, Ark., and Birmingham, Ala.

William P. McIntosh and John A. Hancock have joined Southern Heater's sales staff in the Memphis branch. Mr. McIntosh will cover northern Mississippi and portions of west Tennessee, and Mr. Hancock will cover Memphis and portions of east Arkansas.

Patent Granted For Gas Filter and Pilot Lighter

Walter T. Lynch, of Lyn-Gas Co., New Hartford, Conn., has been granted a patent on a combined gas filter and pilot lighter which is designed to eliminate troubles experienced due to clogging of pilot light orifices by solid particles and gums contained in various types of fuel gas.

Oregon LPG Firm Branches Out

The Baker Liquid Gas Co., with headquarters in Baker, Ore., recently opened offices and a distributing center in La Grande, Ore., it was announced by Charles S. Lewis, manager.

With an 18,000-gal. storage capacity, complete with trucking facilities, the new Baker branch is under the management of Don L. Bjelke. Service will include carburetion for tractors, trucks, stationary engines, water pumping equipment and sprinkler irrigation systems.

The new firm is currently cooperating with the Oregon State Highway Department on a weed burning program and is expected to offer a similar service to farmers in the area.

California LPG Firm Expands Building Program

New quarters for California Propane Service, Inc., are now nearing completion at Santa Susana, Calif., with two other buildings to come later in the company's expansion program in Ventura County.

According to Manager Vernon T. Keene, the new Santa Susana building will house the main office of the entire operations of California Propane Service and will contain a home applinace sales room as well. Adjacent to this location is the firm's propane storage yard, where an LPG truck and auto filling station will be operated.

California Propane Service, Inc., is an independent company owned by Donald J. Hansen and Vernon Keene.

LPG Cooks Meals For Religious Meet

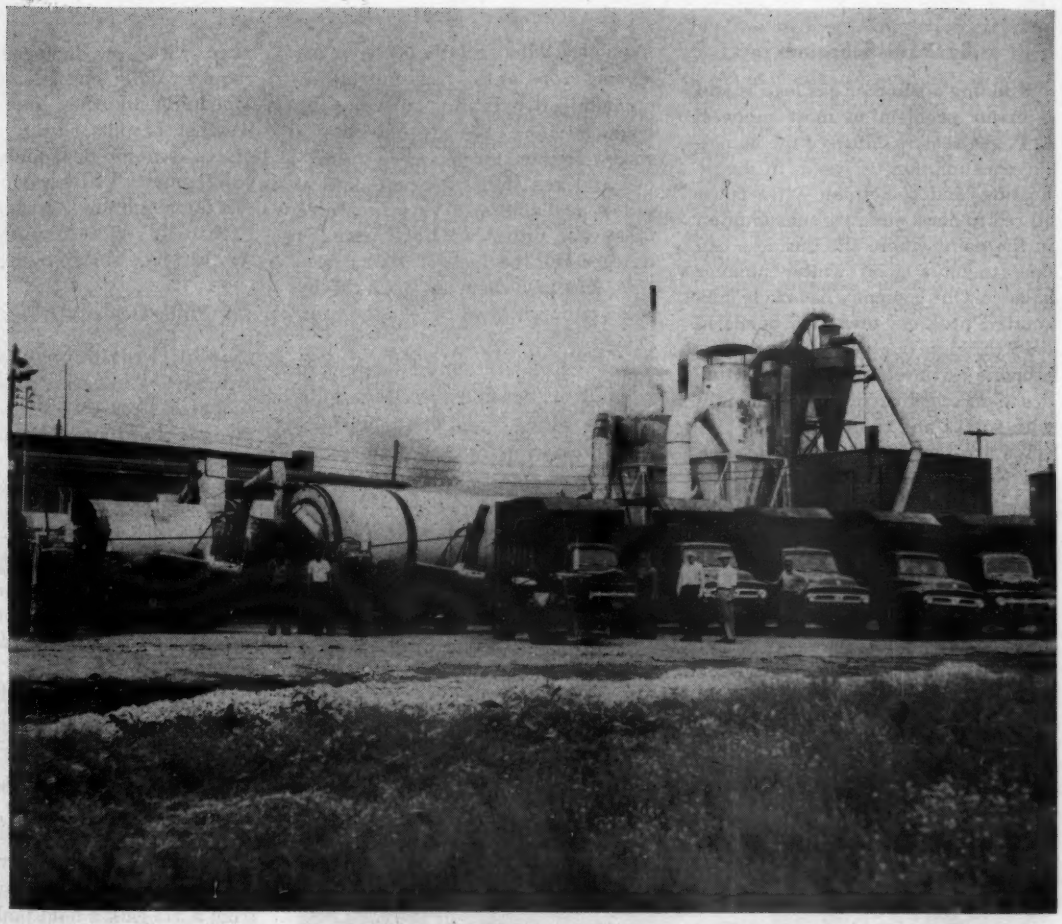
Gas requirements for cooking meals for over 80,000 Jehovah's Witnesses at the eight-day assembly of the Watchtower Bible and Tract Society, held recently at the Yankee Stadium, were more than the city of New York could supply. Over 5000 lbs. of liquefied petroleum gas were transported in 100-lb. cylinders from the Suburban Propane Gas Corp. plant at Bound Brook, N. J., and used to supplement the local gas supply.

The use of LPG was required when an overflow of about 30,000 Witnesses descended upon New Market, N. J., where they set up the Watchtower Trailer City to house about 10,000 people and tents to take care of the overflow. Suburban Propane supplied all of the gas at the Trailer City.

Butane-Propane

POWER SECTION

INSTALLATION • CARBURETION • SERVICING



Propane-equipped fleet of trucks, tractors, and hay choppers at the Howard Rhea alfalfa dehydration mill, Fremont, Neb.

Trained Service Department Provides Key to Load Balance

Fremont bulk plant of the Nebraska Bottled Gas and Appliance Co.

By Paul Schreiner

Building a summer gas load is still a major problem to most midwest L. P. gas dealers. Much of the domestic consumption is used in house heating, and something extra is required to boost summer consumption to the point where the business can operate on a good winter/summer balance. Our company has made substantial progress toward a balanced load through our activity in selling propane carburetion. Our opportunities to make conversions come mainly with trucks and tractors.

We are fortunate in being located in an area where alfalfa is one of the leading crops, as this has brought several alfalfa dehydrating mills into our trade territory. We are not able to supply propane for operating the dryers at these mills, because natural gas is available at a very favorable off-season price, without standby charges. But the fleets of trucks, tractors, and hay choppers operated by these mills are ideal conversion prospects.

The mills operate 24 hours per day from about the middle of May until the first killing frosts. The field equipment must keep the dehydrators supplied with raw material, and this requires daily operation, on a long schedule, all the time that the weather permits cutting. It also requires extreme dependability in the power plants, and freedom from layoffs for repairs is a great advantage. Propane fits these requirements better than any other engine fuel.

Liquid withdrawal systems are generally installed, with built-in tanks, cold manifolds, and all fuel units out of the way of mounted equipment.

Mills Desirable Accounts

Each dehydrating mill operates its own fleet of trucks, tractors and hay choppers. They are ideal accounts for the gas distributor, because of the seasonal demand already mentioned, and because the deliveries are large and regular, and the accounting expense is low. There is no credit problem, as these concerns are substantial and well financed. Each dehydrator account consumes as much fuel as a dozen or more average farm tractor accounts.

A typical example is the Howard Rhea dehydrator in Fremont, Neb. This season this mill is operating five trucks, three tractors, and three hay choppers. The trucks are fueled at the mill from a 1000-gallon storage tank equipped with an electric pump. The tractors and cutters are refueled from a 375-gallon field tank mounted on a four wheel trailer .This field tank is returned to the mill and refilled from the 1000-gallon tank by any one of the trucks. Thus we make one delivery for the entire fleet, and the travel time in making the delivery

is only a matter of minutes.

Many truck and tractor owners are interested in propane as a motor fuel, because they have read testimonials or heard personal reports from satisfied users. Most of these prospective users will convert their engines only if they are convinced that the job will be satisfactory and profitable. To convert an engine to burn propane, and get the right kind of results includes more than just bolting on a set of propane carburetion equipment. In order to do the right job the service man making the installation needs to know the fundamentals of engines and carburetion. He needs to understand the principle of the venturi, and how to determine the proper size for the particular engine and carburetor in use. He needs to know about manifold vacuum and manifold temperatures in relation to the use of a dry fuel in place of a wet fuel. He also needs to know compression ratios, and whether or not it is advisable to raise the compression ratio.

It has been a common belief in the past that all the engine changes necessary to burn propane are to raise the compression and advance the spark, but it is not that simple. We make most of our conversions without raising the compression, but we always reset the ignition timing with a tachometer or a vacuum gauge. We prefer the tachometer because it is more accurate. We reset the timing whether the compression is changed or not, because the actual burning of propane in the combustion chamber proceeds at a different rate than with gasoline. More time is required for complete combustion, and best power and economy can only be obtained by fitting the timing to the fuel. Correct timing for propane can not be determined with a timing light, but after the most efficient firing point is located with a tachometer, a new index mark may be put on the engine, so the timing light may be used in future service jobs if it is more convenient, or if there is no tachometer available.

It has been our experience that cooling the intake manifold gives about the same gain in performance as raising the compression ratio. The higher compression affects the ignition and sometimes causes hard starting, and if done by planing the engine head it will sometimes lead to head gasket trouble. On the other hand, installing a cold manifold especially designed for propane gives about the same results, can be done at small cost, and does not affect the engine or the ignition system.

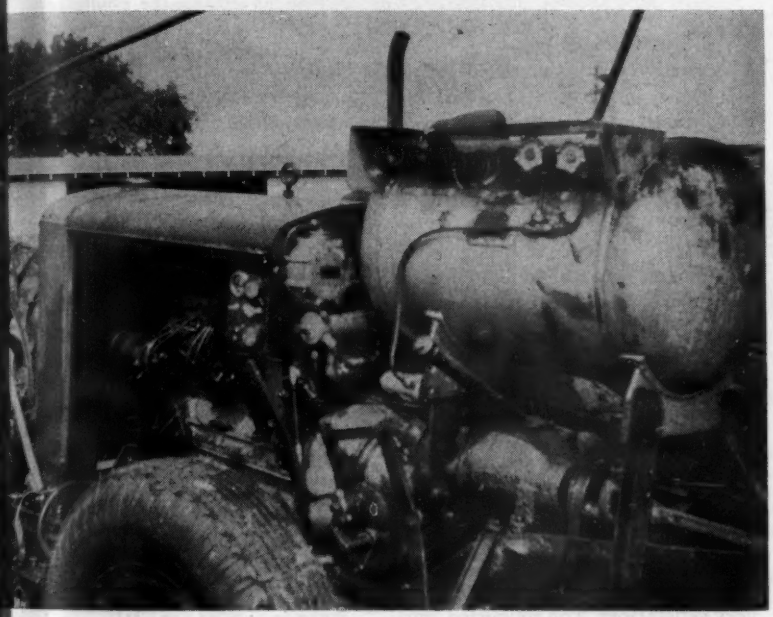
It is also important that the service man knows exactly how the propane carburetion equipment is made, and the purpose and method of operation of each part. In order that he may be able to service the equipment at any later date, it is also necessary for him to know how to make the proper adjustments for best operation. He must know how to use the testing instruments so he can tailor the adjustments to the requirements of the individual engine.

Few service men that we can hire come to us equipped with the knowledge and skill that they need for this work, or for the other jobs that the service men must be able to do in installing and servicing appliances and burning equipment. We are learning all the time, and the life of a service man in our organization seems like one of never-ending training.

When we hire a new man, we put him out with an experienced service man for several weeks on different types of installation and service work. He learns by doing, and he is encouraged to ask questions about anything that is not clear to him. We want him to know the reason for every operation that he performs, and particularly its relation to safety. When he has learned how to handle propane properly, he is sent alone on deliveries, but he will continue to work with experienced help on installation and service work for several months, until he is capable of handling all types of service.

Whenever a man shows an interest

Converted Ford industrial engine powers the hay choppers of the Howard Rhea alfalfa dehydration operation.



Training is part of the job. Paul Schreiner demonstrates the anatomy and adjustments of a new carburetor to service men Bart Tillison and Stan Gruning.

in propane carburetion, we give him as much training as possible in this field. In this, as in the other phases of service work, whenever a problem arises we try to find or work out the answer, after which it is discussed and explained in detail with the entire service staff. Our men have been particularly good about sharing their knowledge with the others; four men in our service department have had a total of 31 years experience. Two of these men have specialized in carburetion, and all are trained in all the other types of propane service in which the company is engaged. We have found the BUTANE-PROPANE POWER MANUAL very useful in our carburetion training work, and as a reference volume and guide on service problems.

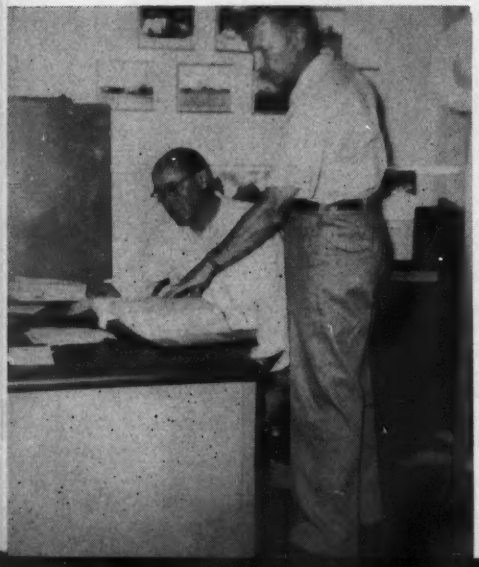
Driver Milo Warner fills the 1000 gallon tank for one of the alfalfa mill customers.

Owner Best Salesman

We have found that the best and easiest way to sell conversions is to take the prospect to see a satisfied user. Planning ahead for this, we endeavor to make each job the neatest looking and best operating conversion possible. We plan each tractor conversion in relation to the job that it will do, and arrange the units so they will not interfere with the mounted machinery, and so the fuel and water lines will be protected as much as possible. We find that this pays off, as the owners are enthusiastic about their converted tractors, and are proud to show them to other owners.

Vapor conversions have been very widely used in our area. We are quite conservative on this matter, limiting our vapor installations to small engines which will not be used in cold weather, because a vapor system on a motor where only a liquid system can supply enough fuel for all conditions will surely lead to dissatisfaction. A full explanation as to why we recommend the liquid withdrawal system will get the order for the liquid system, even at the extra cost, almost every time.

President Dave Lamme shows Service Manager Paul Schreiner that the winter-summer load ratio has reached almost exactly 1½ to 1.



Most of our tractor conversions are made with a liquid system, a built-in fuel tank in place of the gasoline tank, a set of cold manifolds, and no change in the compression ratio. We reset the ignition timing for maximum power, and we recommend colder spark plugs when the present plugs need replacing. This procedure has proven very satisfactory. The converted tractor has about the same power that it had on gasoline, and it will use about 10 to 15% more gallons of propane to do the same amount of work. We tell the prospect that he must expect this increase in fuel consumption, but show him that there is still a saving in fuel cost. And he can run at least five times as long between oil changes, and his motor will run between two and three times as long between overhauls.

Carburetion Paid Off

Our carburetion activity has paid off in every way. In the past two years it has brought us out of a very bad winter/summer load ratio, and has enabled us to increase our winter heating commitments—a thing we would not have dared to do without a substantial gain in summer gallonage. Our average increase throughout the year has been about 1½ carloads of fuel per month, and for the fiscal year beginning April, 1952, through March, 1953, we purchased 38½% of our fuel during the six summer months. This is almost a 1½ to 1 winter/summer ratio, which we are trying to maintain, and may even be able to improve. We could not have accomplished this without the motor fuel load that we have built during the past few years.

Started In 1947

The Nebraska Bottled Gas and Appliance Co. was started in Fremont, Neb. in 1947. A branch has been added in Oakland, Neb., and we have a total storage capacity of 78,000 gallons. We cover an area of about six counties from these two points, and maintain a retail store in Fremont. We install and deliver propane for domestic and commercial use, handling cylinders as well as bulk. Bulk systems are gradualy replacing our cylinders, as the homes can be equipped with heating systems. But we can only expand our heating service as we pick up new summer gallonage to balance the load. We believe that the key to load balancing in our area is a highly trained service department that enables us to sell motor fuel accounts, and then give the customer the results that we have promised.

HERE'S A RECORD HARD TO BEAT

at the Tulsa oil show

97% ENSIGN

By actual count at the world's greatest oil equipment show in Tulsa, 97% of all natural gas engines carried Ensign Carburetion.

Significant too, many of the Ensign installations exhibited were of the multi-fuel type, that is, Ensign carburetion which permits use of natural gas, gasoline or LP-Gas. This "combination" is ideal for engines used on well drilling and servicing because it facilitates easy relocation of the rig from one lease to another.

Each succeeding oil show finds more and more gas engines Ensign equipped. We are both proud and grateful for the acceptance of our products by engine and equipment manufacturers, many of whom have been our customers for nearly 40 years.

ENSIGN CARBURETOR COMPANY

7010 S. Alameda St., P.O. Box 229, Huntington Park, California

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Reprinted from leading oil industry publications

ENSIGN

CARBURETOR COMPANY

7010 S. Alameda St., P.O. Box 229,
Huntington Park, California

At the world's largest power equipment show, the International Petroleum Exposition, held in Tulsa this year, more than 180 gas engines were exhibited, many in operation. Slightly over 97% of these gas engines carried Ensign Carburetion equipment. Many of the carburetor units were of the multi-fuel type wherein natural gas, propane and gasoline can be used alternately as fuel.

A Plainsman Turns To Butane

One of seven Chrysler industrial engines that pumps 24 hours per day during the season for the J. O. Bass ranch.

By Carl Abell

GENE BUMPUS, general manager of Johnson-Bumpus, Inc., Plainview, Texas, dealt out the figures and statistics until we were both dizzy.

"Maybe you would like to see some of these pumps in actual operation, and talk to a farmer who has had a lot of experience operating on butane," he suggested. "We can probably find a few not too far away."

So we got in the car and drove about 15 miles northwest to Edmonson, and stopped at the Edmonson Butane Co., in which Gene owns an interest. The plant was going full blast, in spite of the fact that it was 3 o'clock Saturday afternoon.

The manager, Finas Edwards, reckoned that he could show us what we wanted to see. He hailed a passing motorist, who turned his new Ford into the yard. We were introduced to "J. O.", who readily agreed to tell us about his operation, and stated that at the moment he had several pump engines and a couple of his tractors at work.

J. O. Bass is a 7-well farmer, on the youngish side of 40, smaller than average in height and build, with the soft-spoken self-confidence of the successful business man. He has used butane in his pump engines since 1939, and in his heavy tractors since 1946. He has 1400 acres under cultivation, and last year he grew 32,000 bushels of maize and 350 bales of cotton. This year the acreage will be about the same, but he is anticipating that some time soon there will be a break in the prices of those crops, and he wants to get into something more intensive. His first experimental planting is 15 acres of onions, grown from seed. He would be glad to show us over the place.

We stopped at the first well, and watched the crystal clear stream of water flow from the 10-inch pump and spread out in the distributing ditches, and from them into the furrows. A brand new Chrysler Industrial V-8 engine purred steadily as it turned the pump.

"I made a good profit last year," explained J. O. "I replaced all of the old pump engines with new ones like this. We have used a mixture of various kinds, but mostly Chrysler line-

Trailer-mounted, 500-gallon field tank goes with the tractors to remote parts of the Bass ranch.

The "winter sedan" is a big husky 6-plow unit with enclosed and heated cab, and 72-gallon fuel tank.

8's and Packards. They were various ages and models and the maintenance problem got a little confusing. This time I decided to standardize, and start over with new engines that were all alike.

"The old engines were good, and they gave excellent service on butane. Back in the thirties, when we pumped with gasoline, we had to give the engines a general overhaul at least once a year, with minor repair jobs between overhauls. Major overhauls on butane averaged about every third season, with a little reconditioning on the ignition systems between overhauls. If it wasn't for the dust storms, we could get along with even less frequent overhauls. That applies to the tractors as well."

"The pump engines have Algas equipment. It is new to us—came with the engines. It is doing a good job, and it does not worry us. Ed-

wards takes care of all our carburetors, and they seldom give any trouble. We thought we had some a while back, and he put in a new set of distributor points and cured it."

Over in another field about half a mile away, two tractors were stirring up dust. We asked if they belonged to him.

"Yes. Those are the only two that are working today. We are just finishing up the listing for our maize. If you are interested, we will drive over and take a look."

One tractor was working the field ahead of the other, pulverizing and leveling the rich red loam. The second machine pulled a four plow lister, forming the seed beds and furrows. Both tractors were Massey-Harris 44's.

"We have three of these for regular work during the planting and growing season, but we break the ground with our big tractor. That's a Massey Harris 55, with a special closed cab that we built ourselves. It gets pretty cold during plowing season, so we give the driver some comfort, including a car heater. It pulls 6 disc plows, and turns furrows 12 inches deep.

"The small Masseys are a year old now, and the 55 is two years old. We bought them equipped for gasoline, and had Edwards make the conversions, so we could get larger tanks. The 55 has a crosswise horizontal tank, and carries 72 gallons of fuel. The carburetion is Ensign."

We asked about maintenance practices.

"Our tractors are serviced regularly as far as lubricating and oil changes are concerned. Taking care of air filters is something else. We clean them frequently under any conditions, but during dust storms they get cleaned every day. It makes a difference in the life of the engines. We have not had to touch the engines on those new tractors yet. On the old ones, it was every third year on butane, and a lot oftener on gasoline.

"We run these tractors for a long season. Our main crops, cotton and maize, require from 12 to 15 plowing or cultivating operations per year. Many months we buy from 20,000 to 25,000 gallons of fuel."

On the way back to the plant, we passed J. O.'s machinery yard. The man really takes care of his equipment. Twenty or more cotton trailers were set up on blocks. The wheels and tires had been taken off and stored in a closed building without windows, to prevent deterioration of the rubber due to light. All of the machinery and tractors not in use were lined up in a straight row along the driveway, each implement headed toward the drive so it could be coupled on at a moment's notice and with no lost time. The tractors were headed out, ready for immediate use. The fuel supply for the tractors was at the end of the line, ready to fill tanks where it was, or be towed to some distant field where it would save the time of running tractors back to the yard for refilling. The coupling on the end of the hose was screwed down on a blanked off fitting, so it could not accumulate Texas dust and transfer dirt into the tractor tanks.

Here, we thought, is a man who knows what he is doing. He is not guessing when he says it pays to use butane in his farm engines.

Discussing the home and farm applications of LPG at the LP-Gas Information Service exhibit of the recent annual convention and exposition of the American Home Economics Association in Kansas City, Mo., are students and, left to (right, George J. Schulte, Jr., assistant director, LP-Gas Information Service, M. A. Ennis, Employe training director, National Committee for LP-Gas Promotion, and Robert E. Borden, director, LP-Gas Information Service. More than 5000 home economists, home demonstration agents, editors, home economics teachers and students attended the convention.

Logging Trucks Powered By LPG

By Pete Gray

Equipment Distributors, Inc.
Parkland, Washington

"Propane-Powered" — those are the words on the bumpers of the 12 International logging trucks operated by Cotten Brothers of Tacoma, Wash., one of which is being fueled in the picture at the right.

In addition to the 12 logging trucks, Cotten Brothers also operate 3 lumber trucks, several pickups, a loading shovel and two light plants with propane as the fuel. Buses that have been converted to living quarters are equipped with propane for cooking, water heating and heating, as in the logging camp itself.

The first step in converting the equipment to propane was to convert a 1951 International LF190 lumber truck. This truck has a Red Diamond 450 engine and the conversion was made without raising the compression or cooling the manifold. This procedure is not usually to be recommended, as a slight loss of power is experienced. However, the truck now has traveled 90,000 miles and is still in good condition, though no work has ever been done on the motor.

Propane is supplied by Home Gas Co. of Tacoma, who also have taken care of any carburetion work which has been required. Home Gas Co. is a Calor Gas distributor.

South of Tacoma on the highway traveled by the trucks coming to town, Home Gas Co. has a 5,000 gallon storage tank for truck fueling, complete with pump and meter. It is mounted on a trailer so that it can be moved when necessary.

All of the International trucks except the first conversion are factory equipped with Ensign carburetion. The logging trucks average 3.62 miles per gallon and are driven approximately 318 miles per day. The lumber trucks travel 300 miles per day and average 4.12 miles per gallon.

In the month of June, Cotten Brothers used 15,844 gallons of propane for motor fuel and 2,500 gallons for other purposes. Cotten Brothers have found maintenance costs have been lowered considerably, although exact figures are not yet available. However, increased power with less lost time for repairs have made conversion to propane well worthwhile.

We nominate this as the oldest automobile operating on propane—a 1898 Stanley Steamer. The owner-operator is George Hanna, of Richardson, Texas; co-pilot, A. J. Faucher; ground crew, Emmett Godfrey.

There Are No Cars Too Old To Operate On Propane

One of the sensational displays at the last Texas state fair, at Dallas, was an 1898 model Stanley Steamer which was in constant operation around the fair grounds, advertising the wares and services of Butane Gas Sales Co., Arlington, Tex., Emmett Godfrey, owner.

The automobile was originally owned by a Texas and Pacific Railroad agent, who used it for a number of years, and then kept it as a relic. Following his death, his widow gave it to her nephew, George Hanna, of Richardson, Tex. Mr. Hanna recently brought the car to Arlington, where A. J. Faucher, of the Faucher Controls Co., rebuilt it and installed a propane burner in place of the kerosene burner with which it was originally equipped. The necessary propane fittings and trailer tank were supplied by Emmett Godfrey.

The 20-lb. cylinder of propane keeps the car in continuous operation for about 8 hours—quite a record for operating economy. The veteran automobile traveled under its own power from Arlington to the state fair at Dallas, a distance of about 25 miles. Time consumed in the journey was not revealed, but informed opinion places it at about two hours. This is a little better than its early speed records, but it could be because roads have improved.

The owner points out that the complete tune-up equipment required by this simple, old-fashioned engine is one screwdriver, but the driver's licensing is a little more complicated, as a steam engineer's license would be required in most states.

Fred L. Hartley

A. C. Lyles

Fred L. Hartley Installed As CNGA President

At the annual meeting of the board of directors July 14, Fred L. Hartley, general superintendent of operations, Union Oil Co. of California, was installed as president of the California Natural Gasoline Association. A. C. Lyles, chief gas engineer, General Petroleum Corp., was elected vice president, and E. R. Millett, Jr., was again appointed secretary-treasurer.

Committee chairmen to serve during the next fiscal year include: Mr. Lyles, advisory; L. V. Cassaday, Lomita Gasoline Co., awards; George C. McLaren, Standard Oil Co., education; Fred Carter, Carter-Jones Co., entertainment; D. R. Arnold, The Superior Oil Co., fall meeting; M. L. Fort, Pacific Lighting Gas Supply Co., finance and budget; Fred C. Brunner, C. F. Braun & Co., program; E. R. Millett, Jr., publicity; J. H. Watson, Union Oil Co., technical, and M. L. Arnold, Richfield Oil Corp., technical advisory.

Chicago Transit Authority To Buy More Propane Buses

Chicago Transit Authority, world's largest user of propane buses, with 551 in service on July 1, has asked for bids on the manufacture of an additional 100 of this type to continue its modernization program. This is in addition to the 300 propane buses ordered during recent months, on which deliveries started in July.

The 100 buses are expected to cost approximately $2 million. Chicago was the first city in the United States to make extensive use of diesel-powered buses. It is of interest to the L. P. gas industry to note that no further purchases of diesel buses have been made by the CTA since their first successful tests with propane buses nearly four years ago. Not the least of the advantages of the propane buses is the greater public acceptance due to the absence of objectionable exhaust fumes.

Revised Specifications and Standard Test Methods Issued By CNGA

The California Natural Gasoline Association has published a revised edition of its Bulletin TS-441, "Tentative Specifications and Tentative Standard Methods of Test For Liquefied Petroleum Gases." This supersedes the original Bulletin TS-441, and is the first revision of the specification and standards published since 1944.

Bulletin TS-441 is the generally accepted standard for production control, not only in California, but throughout the industry. Copies are obtainable from California Natural Gasoline Association, 510 West Sixth St., Los Angeles 14, Calif.

150 Conversions Since 1950

One of the new LPG-powered Case tractors operating in Illinois with a forage harvester.

For a number of years Case tractors in the Southeast have been converted locally for burning LPG. These conversions were so successful in improving engine performance and reports from dealers were so enthusiastic that the company decided to produce factory engineered LPG equipment and, at present, this equipment is available on three of its models.

The following report on experiences with LPG conversions from the Pounds Motor Co., Winter Garden, Fla., a Case dealer in Florida, is typical of the reports that induced the company to provide factory equipped LPG models:

"We made our first installation in July, 1950, and since that time we have made over 150 installations. We have had so meof these running now for about two years and find that the cost of upkeep on the motors has been cut in half.

"We also find that we run the oil up to 1000 hours without changing it, which is approximately 85% saving in oil. We also find in the orange groves in Florida that a tractor will operate on a saving of one to two gallons of fuel per day and will do an average of 1½ to 2 acres of work a day more, which is a saving to the growers of at least $2.50 to $3 a day.

We estimate about 20% more power.

"We have made installations on irrigating units burning 80 gallons of gasoline costing 25 cents a gallon formerly, whereas they are using L. P. gas costing 15½ cents a gallon now —saving $8 a day.

"Speed sprayers, which normally burn 50 gallons a day, now burn about 45 gallons of L. P. gas and the difference in prices of between 9 and 10 cents a gallon will run from $4 to $5 a day."

The Case LPG fuel tank, made by Pressed Steel Tank Co., Milwaukee, is of unusual sturdy construction and completely protected by relief valves for hot weather conditions. The tank is mounted on the tractor for ready accessibility to the operator with all gauges clearly visible.

Survey Proves Economy of LPG As Tractor Fuel

At present bulk price levels, L. P. gas tractors have the lowest annual cost of operation, according to a farm tractor study by George Pickard, professor of power and machinery, University of Illinois, Urbana. His study covered tractor operation in Illinois, Iowa, Oklahoma and Minnesota.

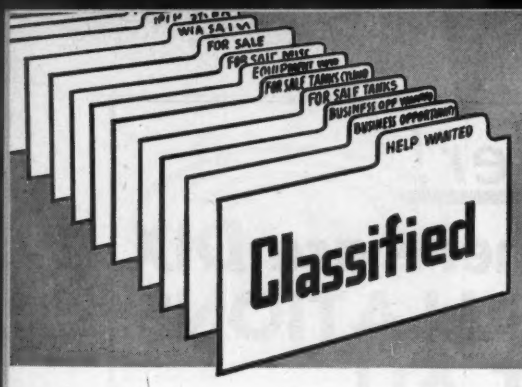
Original cost and depreciation, fuel cost, consumption, maintenance, storage and other factors were taken into consideration in figuring the total annual cost of operation. Professor Pickard's research covered L. P. gas, diesel and gasoline tractors and three sets of prevailing fuel prices in various parts of the country. The LPG tractors proved most economical.

An estimated 3 to 4% of the country's farm tractors are now operated on L. P. gas, according to Professor Pickard. Most users contacted are enthusiastic about the economy and extra power resulting when the tractor is properly adapted to LPG.

American Taxicab Assn. Discusses Propane Operation

Much of the maintenance meeting of the American Taxicab Association, Pacific Regional Convention, held at the Wilton Hotel, Long Beach, Calif., on July 21 and 22 was devoted to discussion of the maintenance savings resulting from the use of propane as taxi fuel.

A detailed report of his experience over the past three years was presented by Clayton Hoyt, owner of the Santa Monica Cab Co. (See page 122, March 1952, "Butane-Propane News".)



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HELP WANTED

Wanted Appliance Salesman

on L. P. and natural gas property, midwest town of 15,000 population. Liberal salary and commission basis. Experience required. Write Box 360, BUTANE-PROPANE News, 198 S. Alvarado St., Los Angeles 57, Calif.

WANTED: MANUFACTURER'S REPRESENTATIVES to sell high-quality old line Gas Boilers, Furnaces, Floor Heaters and Conversion Burners on commission. Men with established trade in non-competitive lines will be considered. We have several choice, protected territories available. You must be aggressive and qualified to handle heating sales. Write Box 255, BUTANE-PROPANE News, 198 South Alvarado St., Los Angeles 57, California.

OUR PREFERENCE IS TO WORK WITH experienced L. P. G. men. Write us. Oil Industry Employment Service, 405 Tuloma Bldg., Tulsa, Okla.

YOUNG, AGGRESSIVE SALES TRAINEE for L. P. gas and Anhydrous Ammonia System sales. Free to travel, perferably single. Previous sales experience and knowledge of L. P. gas industry helpful. State complete background and sales experience in application to: General Manager of Sales, The J. B. Beaird Company, Inc., P.O. Box 1115, Shreveport, Louisiana.

MAN EXPERIENCED IN LPG BUSINESS in service, sales, collections, in a community along Pacific Coast. If interested in a good starting salary and have proper qualifications, write giving age, experience, references and marital status. Write Box 415, BUTANE-PROPANE News, 198 S. Alvarado St., Los Angeles 57, Calif.

SITUATIONS WANTED

INSTALLATION AND SERVICE MAN wants work in Northwest. Several years L. P. experience. Write Box 335, BUTANE-PROPANE News, 198 South Alvarado St., Los Angeles 57, Calif.

THE HARD SALE IS GETTING HARDER.
MERCHANDISE — CAMPAIGN.
Have outstanding record for past 24 years with L. P. gas. Available first of year. Write Box 365, BUTANE-PROPANE News, 198 S. Alvarado St., Los Angeles 57, Calif.

WANTED: POSITION WITH GROWING L. P. gas company in Rocky Mountain States. Capable young man with 8 yrs. experience covering all aspects of L. P. gas distribution. Would also like opportunity to buy partial or controlling interest in company at later date. Write Box 370, BUTANE-PROPANE News, 198 S. Alvarado St., Los Angeles 57, Calif.

CAPABLE MAN, 8 YEARS EXPERIENCE in sales, service and management desires permanent, responsible position with L. P. gas company. Write Box 375, BUTANE-PROPANE News, 198 S. Alvarado St., Los Angeles 57, Calif.

BUSINESS OPPORTUNITIES OFFERED

WANTED $35,000.00

Needed for expansion of L. P. Gas Business. Ample security in equipment and real estate.

Box 350
BUTANE-PROPANE News
198 So. Alvarado, Los Angeles 57

ANNOUNCING THE OPENING OF A new service to the L. P. gas industry. Twenty-three years' experience in the business from truck operator to wholesale distributor. We come in contact with many people engaged in the business. Give us your listings—either to buy or sell L. P. gas properties. We have a staff equipped to go anywhere at anytime. All listings treated as confidential. Satisfaction guaranteed. The George Self Agency, Ponca City, Oklahoma.

MANUFACTURER'S AGENTS, L. P. GAS distributors, and dealers make money selling Fairfield Stock-O-Matic water fountains. First L. P. gas burning, fully automatic, non-freezing fountain ever offered for pump jacks, pressure systems or gravity flow. Many other special features. Valuable territories and franchises now available. For full details, write or wire FAIRFIELD ENGINEERING CO., Fairfield, Iowa.

L. P. GAS BUSINESS FOR SALE. 500 CUSTOMERS, located in good Oklahoma town. Two bobtail delivery trucks, one 3500 transport plus storage. Will include building and 6 room home, 4 years old. $15,000.00 will handle. Write Box 400, BUTANE-PROPANE News, 198 S. Alvarado St., Los Angeles 57, Calif.

FOR SALE—TWO MODERN LPG BUSINESS in central Illinois. One has 32,000 gal. storage, stake, pickup, 2 bulk and 2 utility trucks. There are 755 bulk and 1,075 retail customers. Annual sales $184,333. The other has 30,000 gal. storage, pickup, stake, 3 bulk trucks and a 640 GMC cabover tractor with 5,000 gal. trailer. Over 2½ million gal. gas sold per year with total sales $225,000. There are 1,070 bulk, 275 retail and 300 tractor customers. Both businesses have complete bulk plants, offices, warehouses, showrooms, cylinders, tanks, etc. Companies show substantial net earnings and the owners are willing to finance qualified buyers, so you know the businesses are right. For the down payment and inventory approximately $50,000 is required for each business. All inquiries are confidential. We Specialize in Petroleum Properties. PETROLEUM MARKETERS, 218 W. Mifflin, Madison 3, Wisconsin.

FOR SALE: LPG BUSINESS, WELL-balanced operation, bulk and bottles. Expansion possibilities almost unlimited. In large, rich territory in Pacific Northwest. Little competition. Business well-organized and clean. Making money. Adequate storage. Good rolling stock. This is strictly high class and will stand the most rigid investigation. Owners retiring because of health and other interests. Write Box 295, BUTANE-PROPANE News, 198 S. Alvarado St., Los Angeles 57, Calif.

BUSINESS OPPOR. OFFERED - Cont.

SOLD

An LPG Appliance Business

COST—$6.90

JUST ONE 8-LINE CLASSIFIED AD IN A SINGLE ISSUE OF BUTANE-PROPANE News SOLD THIS BUSINESS. This is typical of the QUICK RESULTS you get from classified ads in B-P News.

FOR SALE: LPG BOTTLE BUSINESS, located in northern Illinois. Includes home, bottling plant, office and display room, workshop, warehouse, and four-car garage, with two delivery trucks and business coupe. All consolidated to make an efficient money-making operation. About 750 customers plus sub and wholesale dealers. This is strictly high-class and will stand a most rigid investigation. Sale price: $100,000.00, at least one-half cash required. Retiring because of health and other interests. Write Box 395, BUTANE-PROPANE News, 198 S. Alvarado St., Los Angeles 57, Calif.

LPG BULK AND BOTTLE BUSINESS with furniture and appliance store. Will sell separately. Located in northeastern Oklahoma. 1—7000 gal. U69 125 lb. W.P. storage tank; 1 KB6 '47 Int. 2-ton with 1200 W.G. twin propane tanks; pump, hose, Ensign carburetion. Write Box 390, BUTANE-PROPANE News, 198 S. Alvarado St., Los Angeles 57, Calif.

FOR SALE: A FAST GROWING, WELL balanced, retail and wholesale bulk L. P. gas business. Located in the midwest. 48,000 gallon storage. Excellent gas contract. Good site with new buildings and room for expansion. Write Box 405, BUTANE-PROPANE News, 198 S. Alvarado St., Los Angeles 57, Calif.

CITY GAS UTILITY AND L. P. BOTTLE gas company in Oregon. Growing community in line for natural gas. Will sell separately. Profitable businesses with unlimited expansion possibilities. Terms: M. K. Macready, Box 245, Cottage Grove, Oregon.

BUSINESS OPPORTUNITIES WANTED

WANTED TO BUY: BOTTLED GAS business or combination natural and bottled gas company. Write Box 380, BUTANE-PROPANE News, 198 S. Alvarado St., Los Angeles 57, Calif.

WILL BUY L. P. GAS BUSINESS, 2000 customers or larger, with or without storage; should be located where further expansion is possible. Write Box 385, BUTANE-PROPANE News, 198 S. Alvarado St., Los Angeles 57, Calif.

EQUIPMENT FOR LEASE

SIX ICC 105A-300W PROPANE TANK cars available on ten year lease basis, at $110.00 per car per month. Mileage to lessee. Write Box 410, BUTANE-PROPANE News, 198 S. Alvarado St., Los Angeles 57, Calif.

Classified

EQUIPMENT WANTED

G-1 TANKS

12" x 24" Government Surplus

NEW OR USED — ANY QUANTITY

Box 485, Highland Park, Illinois

FOR SALE — TRUCKS AND TRAILERS

NEW: IMMEDIATE DELIVERY. 1400 WG U69 propane lightweight twin barrel delivery unit. Mounted on new 1953 2-ton, 2-speed Chevrolet truck. Fill and vapor hose assemblies—Viking Mechanical Seal Pump—power take-off assembly. READY TO GO FOR $3845.00 tax paid. Also available at low extra cost: meters—fire extinguisher—motor fuel tank and L. P. carburetion. American Tank & Manufacturing Co., 2136 West Commerce Street, Dallas, Texas. P. O. Box 5525. Telephone Riverside 9183.

NEED A WORKHORSE? WE HAVE NEW 1953 Model 353 GMCs; 2 ton, 2 speed, w/8:25 tires equipped with a 1400 WG Nor-Tex Standard Twin Propane unit. It's skirted, plumbed and perfectly balanced! Complete with recessed fuel tank, Viking KK190 pump with mechanical seal, 50' filler hose, ICC lights and power take-off with spline jack shaft. Finish is aluminum paint over red oxide. Tax paid and ready to go. $4043.80 FOB North Texas Tank Co., Box 519, Phone Central 5416, Denton, Texas.

A PACKAGE UNIT SPECIAL! A NEW 1953 2 ton, 2 speed Chevrolet equipped with a 1250 WG Nor-Tex Standard Twin Propane Unit. It's skirted, plumbed and perfectly balanced! Complete with recessed fuel tank, Viking KK190 pump with mechanical seal, 50' filler hose, ICC lights and power take-off with spline jack shaft. Finish is aluminum paint over red oxide. Tax paid and ready to go $3919.85 FOB North Texas Tank Co., Box 519, Phone Central 5416, Denton, Texas.

SPECIAL: AMERICAN "BETTER-BILT" lightweight 1400 water gallon U69 propane twin barrel delivery unit, with Viking Mechanical Seal Pump—Neptune Print-O-Meter—fill and vapor hose assembly—mounted on new 1953 2-ton, 2-speed GMC; 125 hp engine with 8.25 tires—READY FOR SERVICE. PRICED AT $4475.00 tax paid FOB Dallas. Other sizes available at comparable low cost. American Tank & Manufacturing Co., 2136 W. Commerce Street, Dallas, Texas. P. O. Box 5525. Telephone Riverside 9183.

TWO EXTRA GOOD TRUCKS, GOOD rubber, fully equipped, ready to roll. Sacrifice price. 1950 Int. L-160 2-ton, 1250 gal. twin propane tanks. 1949 Int. K-6 2½-ton, 1448 gal. single propane tank. From Gas Dealer. Trucks now in use, must sell. Write Associated Appliance Sales Co., 127 N. Main, Lindsay, Oklahoma. Phone 343.

NEW PROPANE DELIVERY TRUCKS. Furnished with or without tanks, single or twin barrel. Why do we sell as many trucks as we do all over the United States and Canada? We are in the gas business ourselves and know what it takes to equip a truck properly. We buy everything direct from the manufacturer and pass on the savings to you. Our overhead is lower and we are satisfied with a lower margin of profit. Over 200 satisfied customers who are yearly giving us repeat orders. IMMEDIATE DELIVERY, BUDGET FINANCING. WHITE RIVER DISTRIBUTORS, INC., Phone 570, Batesville, Ark.

LATE MODEL USED PROPANE DELIVery trucks. Some of these units have only been used six months. SAVE UP TO $900.00. White River Distributors, Inc., Batesville, Ark.

TWIN BARREL DELIVERY TRUCK — U69 construction — 710 water gallon each barrel — Viking pump — 50 ft. ¾-inch new high pressure hose — 5 new tires — chassis has been 56,000 miles — new motor 5,000 miles. Truck equipped with new Pittsburgh Meter. Mounted on 1950 Ford cabover truck. If interested, call or write: Salmon Butane Gas Co., Phone 105-J, Summerville, Ga.

Classified

FOR SALE — TANKS AND CYLINDERS

AT DEPRECIATED PRICE, 800—60#—4B240 Pressed Steel Tank Company cylinders. City Gas Service, Inc., Wisconsin Rapids, Wisconsin.

CYLINDERS ICC, 4B240. BRAND NEW. 100 lbs. capacity, TW 70 lbs. $13.95, valve extra. Also 20 lb. capacity with Rego valve complete, $9.45. Lower prices for large quantity orders. A complete stock of regulators and fittings for immediate shipment. F. O. B. Cleveland, Ohio. Home Gas Equipment Co., 1301 Carnegie Ave., Cleveland 15, Ohio.

FOR SALE — 2 L. P. GAS DELIVERY tanks — Delta, one 1111 W.O. and one 1310 W.G., each 101 W.P. Delaney's, Inc., P. O. Box 247, Mobile, Alabama.

FOR SALE — TWO 6000 GAL. STORAGE tanks, 200# working pressure. One Chevrolet fuel truck, 12,000 miles, 1250 gal. single barrel tank. One 1250 gal. fuel delivery tank (not mounted). H. B. Mixon, Panama Furniture Co., Panama, Oklahoma.

IMMEDIATE DELIVERY. NEW 30,000 gallon propane storage tanks. ASME U-68/U-200 complete with ladder and platform. Hartford Inspection Certificate. Pennsylvania shipping point. Act fast if you want tanks at old price. Write Box 355, BUTANE-PROPANE News, 198 S. Alvarado St., Los Angeles 57, Calif.

FOR SALE—MISCELLANEOUS

METER THOSE GAS SALES. LIKE NEW Rockwell-Emco type 00 gas meters. Now $10.87. Reductions for volume purchases. Write Associates Propane Gas Corporation, Route 2, Box 429-A, Clayton 24, Mo.

DID YOU KNOW THE ONLY PEOPLE who have had trouble with Smith Pumps would have had trouble with any pump? See our ad on page 128. Smith Precision Products Company, 1135 Mission Street, South Pasadena, Calif.

GALVANIZED HOOD, STAND, AND BASE to protect your two cylinder installation; $5.45 each. Packed 10 to a carton. Also Rego or Fisher 2-cylinder regulator, T block, and 2 pigtails at $4.65 each. Sold on satisfaction or money refunded. Home Gas Equipment Co., 1301 Carnegie Ave., Cleveland, Ohio.

NEW UNIVERSAL ORIFICES SIMPLIFY range conversions to or from any type gas—butane, propane, natural, mixed or manufactured. Merely insert needle point in valve barrel and screw hood orifice down tight for L. P. gas. To adjust to any other gas just loosen hood and allow more gas into burner. No further changeover ever necessary. Install in new and used ranges not so equipped. Many dealers have welcomed this new practical inexpensive asset to sales and service. Order yours today. Needle points in drill sizes 72-71-70-69-68 for top burners and numbers 56 and 55 for ovens. Universal hoods are drilled to fit. Universal needle points 7½¢ each, universal hoods 6½¢ each. In quantities of 1000 pieces or more needle points 6½¢—hoods 5½¢. Shipped postpaid when check accompanies order, otherwise parcel post C.O.D. Balanced stock costs so little—saves so much. MARSH'S, 3536 Lamar, Memphis 18, Tenn.

COPPER TUBING—⅜" OD X .032 WALL —50 ft. coils, lots of 10 or more $5.35 per coil. Less than 10 at 50c per coil. Freight prepaid on 20 or more coils. Home Gas Equipment Co., 1301 Carnegie Ave., Cleveland, Ohio.

ALUMINUM CYLINDER PAINT. EXTRA heavy body, long lasting, 10 minute drying, for spray or brushing. List price $4.30 per gallon. Your cost $2.85 per gallon. Freight prepaid in lots of 20 gallons or more. Finest quality paint you can buy for bulk tanks or cylinders. Home Gas Equipment Co., 1301 Carnegie Ave., Cleveland 15, Ohio.

Classified

FOR SALE—MISC. - Cont.

Equipment for Sale?

39 people answered a B-P News classified ad offering a 30,000-gallon storage tank — and 12 OF THE REPLIES WERE TELEGRAMS. You get quick results from B-P News classified ads.

FOR SALE—IMMEDIATE DELIVERY! Eureka Smokehouse Burner Assemblies! For meat smoke houses using bottled gas. Completely automatic. Clean filtered smoke. Distributes heat uniformly. Low gas consumption. Automatic temperature and pilot control. Less product shrinkage. Easily installed. Write for descriptive pamphlet. Eureka Equipment Company, P. O. Box 396, Beloit, Wisconsin.

FOR SALE: NEW, IN ORIGINAL CRATE, model MC-1044 Smith Butane-Propane pump, complete with steel base, flexible drive coupling, and 2 HP, three phase, 60 cycle, explosion-proof electric motor. $356.00 F.O.B. our warehouse. Wally's Bottled Gas Service, 14209 S. Cicero Ave., Blue Island, Ill.

"STOP THAT LEAK". ITS EASY TO FIND with Leak Detecto Brush. $3.75 ea. Quantity discounts. Solution, 5-gal. $7.50. 1-gal. $1.75. Gas Appliance Stores, Inc. Box 5057, Columbia, S. C.

PROFESSIONAL SERVICES

LET MY LP EXPERIENCE WITH OVER 100 operating properties increase your profits. Floyd F. Campbell, Management and Sales Consultant, 821 Crofton Ave., Webster Groves 19, Missouri.

INDIVIDUALLY DESIGNED BULK PLANTS

H. Emerson Thomas & Assoc., Inc.

Westfield, N. J.

Annual Service Clinic Held By Green's Fuel, Inc.

Ninety servicemen attended the recent annual fuel servicemen's clinic of Green's Fuel, Inc., at Sarasota, Fla., which featured an intensified short course on both the fundamentals and more intricate technical information needed in handling LPG appliances and equipment.

Prepared by manufacturers of major gas equipment were the 24 booths at the clinic, staffed by factory experts. Training at the clinic was carefully planned, with each serviceman attending every station.

Individual attention was the keynote of the clinic, with servicemen able to obtain assistance on special problems from the factory engineers. By the interchange of ideals the clinic hoped to provide a better understanding of the industry as a whole, with the goal of better LPG equipment and service for the public.

ADVERTISERS

★ **These advertisers carry additional information on their products in the 1953 Butane-Propane Catalog.**